॥ विद्या विनयन शोभते॥

Janardan Bhagat Shikshan Prasarak Sanstha's

CHANGU KANA THAKUR

ARTS, COMMERCE AND SCIENCE COLLEGE, NEW PANVEL (Autonomous)

Re-accredited 'A+' Grade by NAAC (Third Cycle- 3.61 CGPA)

'College with Potential for Excellence' Status Awarded by University Grants Commission

'Best College Award' by University of Mumbai

Programme Outcomes

Academic Year 2021-2022

Internal Quality Assurance Cell (IQAC)

Faculty of Arts

Programme- B.A.

Programme Outcomes

PO1 To enable the students to understand fundamental concepts in History, Geography, Economics, English, Political Science, Hindi and Marathi subjects respectively

PO2 To acquaint the learners with various genres of Marathi, Hindi and English literature

PO3 To understand the relationship between literature and society and reflection of Universal truths

PO4 To appreciate world classics in the realm of British, American and Indian Literature

PO5 To develop communication skills amongst the students for better employability

PO6 To make learners sensitive about environment issues and sustainable development

PO7 To understand importance of social, political, economic ethical and human values in life

PO8 To enable the learners to think logically and bridge the gap between local and global environment

PO9 To make the students to have better personality traits

Department of English

Programme Specific Outcomes

PSO1 To appreciate world classics in the realm of English Literature.

PSO2 To recognize importance of historical perspectives while studying literature.

PSO3 To understand salient traits of different schools of poetry.

PSO4 To develop interpretative and critical skills of the learners.

PSO5 To explore the reflection of human values in literature

Department of Economics

Bachelor of Arts

Programme Specific Outcomes

PSO1 Students will able to understand the basic concepts of economics.

PSO2 Students will learn the application of different concepts of economics in practical field.

PSO3 Students will able to appear in different fields of economics.

PSO4 Students can participate in various examinations linked to economics.

Department of Hindi

Programme Specific Outcomes

PSO1 पाठ्यक्रम की समाप्ति पर विद्यार्थियों में अग्रलिखित योग्यता विकसित हो जानी चाहिए।

PSO2 हिंदी की विभिन्न विधाओं के बारे में सुसंगत और प्रभावी समझ निर्माण होनी आवश्यक है।

PSO3 हिंदी के क्षेत्र में विद्यार्थियों की समझ और रूचि विकसित होनी चाहिए।

PSO4 व्यावहारिक हिंदी और इसके व्यावसायिक अनुप्रयोग में बुनियादी कौशल विकसित करना।

PSO5 पाठ्यक्रम के माध्यम से विद्यार्थियों में सामाजिक, राजनीतिक, धार्मिक, सांस्कृतिक विश्वदृष्टि का विकास होगा।

PSO6 विद्यार्थियों में रसास्वाद के कौशल का विकास होगा।

PSO7 हिंदी हेतु उपलब्ध रोजगारों के लिए आवश्यक गुणों का विकास होगा तथा ज्ञानात्मक आधार पुष्ट होगा।

Department of Geography

Programme Specific Outcomes

PSO1 Understand, coherently and effectively about various genres of Geography.

PSO2 Understanding the diverse concepts in the field of Geography.

PSO3 Understand global and regional patterns of cultural, political and economic institutions, and their effects on exploitation of natural resources and landscapes.

PSO4 Understand need for protection and conservation of natural recourses.

PSO5 Develop basic skills in practical Geography and its industrial applications.

Department of History

Programme Specific Outcomes

PO1 To understand the background of social, economic, religious, cultural and political life of people and compare it with present to achieve overall development of society.

PO2 The study of history impart the knowledge of the significant historical events and past mistakes and create awareness for avoid the mistakes in present for better future with peace, progress in diverse and global community.

PO3 History instil the idea of national integration and harmony as well as generates the feeling of nationalism and patriotism.

PO4 History develop curious approach and interest for historical facts, art and architecture, archaeological sites, museums and archives as the sources for research in history

Course Outcomes

SEMESTER I

A. Economics

Course (Paper) Name and No.: UAR1EC1 Micro Economics

CO1 Understand basic theories of micro economics.

CO2 Define ten principles of economics

CO3 Calculate the market demand and market supply.

CO4 Analyse the consumer's behaviour with the help of indifference curve.

B. English

Course (Paper) Name and No.: Introduction to Literature I

CO1 Choose correct use of grammatical units

CO2 Develop quick and efficient reading techniques in order to achieve academic performance

CO3 Classify the different use of formal correspondencein the rapid era of information technology

CO4 Explainthe mechanism of interpretation of technical data by using different methods

C. Geography

Course (Paper) Name and No.: Human Geography

CO1 Understand comprehensibly the nature, scope, approaches, branches and concepts in Human Geography.

CO2 Understand and analyse the trends and patterns of world population change, density, distribution and growth. Evaluate the problems of population

CO3 Understanding the concept, types and patterns of rural and urban settlements.

CO4 Understand and analyse the concept, causes, types, trends and consequences of migration.

CO5 Able to create/ construct and interpret of graphs, maps and population pyramid

D. Hindi

Course (Paper) Name and No.: Hindi (Compulsory)

CO1 कविताओं और कहानियों को पढने से उनमें शुद्ध प्रेम, आत्मीयता, विसंगतियों के प्रति क्रान्ति, सच्चाई से जीवन यापन करने, जीवन मूल्यों के प्रति श्रद्धा एवं विश्वास सर्वधर्म समभाव एवं भारतीयता की भावना प्रेरित कर सकते हैं।

CO2 कहानियों को पढकर महानगरीय जीवन की त्रासदी और व्यस्तता भरी जिन्दगी तथा अकेलेपन पीड़ा एवं स्वार्थी मनोवृत्ति व्यावसायिकता की प्रवृत्ति लोक कलाओं के प्रति उपेक्षा की दृष्टि के ज्ञान का प्रदर्शन कर सकेंगे।

CO3 व्यावारिक हिंदी और इसके व्यावसायिक अनुप्रयोग में बुनियादी कौशल विकसित कर सकेंगे।

CO4 हिंदी हेतु उपलब्ध रोजगारों के लिए आवश्यक गुणों का अर्थात विभिन्न विषयों से संबंधित पत्र लेखन, सुचना के अधिकार का प्रारूप, शब्दगत एवं वाक्यगत अशुध्दि, मुहावरों कहावतों का अर्थ प्रयोग, भावगत शब्दों की रचना, उपसर्ग-प्रत्यय आदि भाषागत ज्ञान का उपयोग कर सकेंगे ।

Course (Paper) Name and No.: Hindi-I (Optional)

CO1 कहानियों का अध्ययन करके महानगरों की संस्कृति और सभ्यता में सुख, समाधान कैसे मिले इस पर समीक्षात्मक अध्ययन करने की ताकत मिलेगी।

CO2 महानगरों की यांत्रिक सभ्यता, नैतिक मूल्य एवं अकेलापन के एहसाह को स्पष्ट कर सकेंगे।

CO3 सामान्य व्यक्ति पर आधुनिकता और यांत्रिकता का प्रभाव इतना अधिक होता हैं कि उसका परिवार ही उसे मूल्य नहीं देता, वह अपने नाम के लिए परिवार पर बोझ बनकर जीता हैं, छात्रों में इन विषयों पर चिन्तन मनन एवं मूल्यांकन करने की क्षमता निर्माण होगी।

CO4 समाज में व्याप्त धर्म, संप्रदाय में भेदभाव, जाति-पाति, ऊँच-नीच, पूजापाठ, अंधश्रद्धा में ढोंग, आडंबर की समीक्षात्मक दृष्टि से विचार मंथन करने की क्षमता निर्माण होगी।

E. History

Course (Paper) Name and No.: History of Modern India (1857 C.E. to 1947C.E.)

CO1 Illustrate the importance of revolt of 1857 and its significance to create awareness about the freedom

CO2 Adopt the process of healthy nationalism and secularism by studying work of social reformers and freedom fighters.

CO3 Student will be able to outline the whole process of freedom struggle

CO4 Students will be able to explain the process of rise of modern India.

F. Marathi

Course (Paper) Name and No.: Marathi Compulsory

CO1 विद्यार्थ्यांमध्ये मराठी भाषेविषयी आवड निर्माण होईल

CO2 विद्यार्थी दैनंदिन जीवनात मराठी भाषेचा वापर अधिक निर्दोष व आत्मविश्वासाने करतील

CO3 विद्यार्थी कार्यालयीन कामकाजात मराठी भाषेचा वापर अचूकपणे करतील

CO4 विद्यार्थ्यांना विविध माध्यमांसाठी सर्जनशील लेखनाचे कौशल्ये प्राप्त होईल

CO5 विद्यार्थी संस्कारक्षम बनतील

Course (Paper) Name and No.: Marathi (Optional) Paper I

CO1 विद्यार्थ्यांमध्ये मराठी भाषा व साहित्य यांविषयी आवड निर्माण होईल

CO2 मराठी साहित्यातील नाटक या वांड्मय प्रकाराची ओळख होईल

CO3 विद्यार्थ्याला वास्तव आणि नाटक यातील फरक समजेल

CO4 मराठी साहित्यातील नाटककारांचा परिचय होईल

G. Political Science

Course (Paper) Name and No.: Constitutional Framework

CO1 Explain the history of making of Indian Constitution, its preamble and basic features

CO2 Identify various provisions for citizenship, fundamental rights, directive principles of state policy and Relationship between fundamental rights and directive principles of state policy

CO3 Examine Union Legislature, Executive and Judicial System in India

CO4 Discuss The Concept of Centralization-Decentralization, The State, Local Self Government & it's Implementation

H. Rural Development

Course (Paper) Name and No.: Rural Development _UAR1RD1

CO1 Describe the meaning, Nature, Scope, Various areas of Rural Development, Rural Society &social Institutions.

CO2 Explain the Concept, Nature, scope of Rural Development, Rural Society, social institutions and social change.

CO3 Identify the Characteristics, Obstacles, Factors, Types of Rural society, Rural social institution and social change.

CO4 Examine the changing pattern of social institution, Role of NGOS, People participation and social change

I. NCC

Course (Paper) Name and No.: Foundation Course in NCC I

CO1 Determine the application of weapons used in army, the organization of army, badges and ranks.

CO2 Demonstrate the concepts of foot drill

CO3 Define Military history, genesis of NCC, customs and traditions of India

CO4 Apply water & natural conservation strategies in daily life for environmental pollution control.

J. NSS

Course (Paper) Name and No Foundation in National Service Scheme

CO1	Explain the working and importance of National Service Organization
CO2	Develop a sense of understanding in the contemporary issues and their redressal mechanisms
CO3	Examine the gender issues and their redressal mechanisms through a mature lens.
CO4	Make use of the knowledge of constitution to have a better view of justice.

SEMESTER II

A. Economics

Course (Paper) Name and No.: UAR2EC1 Micro Economics

CO1 Understand basic theories of micro economics.

CO2 Define ten principle of economics

CO3 Calculate the market demand and market supply.

CO4 Analyse the consumer's behaviour with the help of indifference curve.

B. English

Course (Paper) Name and No.: Communication Skills in English II_UAR2CSK0

CO1 Find out multiple ways of vocabulary enrichment to improve communicative competence

CO2 Develop different highly effective and accurate writing skills

CO3 Appraise E-mail writing techniques for quick and precise for better communication

CO4 Improve the artistic and imaginative skills of different types of writing

C. Geography

Course (Paper) Name and No.: Geography of Environment-I

CO1 Understand the nature, scope, importance and man-environment relationship in Environmental Geography.

CO2 Understand the Structure, functions and types of ecosystems.

CO3 Understand environmental pollution and major environmental issues and evaluate the causes, effects and solutions.

CO4 Understand the importance of natural resources and propose the methods conservation

CO5 Able to fill the map and interpret of thematic maps.

D. Hindi

Course (Paper) Name and No.: Compulsory Hindi _:UAR2HNC

CO1 कविताओं को पढकर आदर्श जीवन दर्शन और विवेक, दूरदर्शिता, शिक्षा, ज्ञान-विज्ञान, सामाजिक, सांस्कृतिक समन्वय की भावना को प्रस्तुत कर सकेंगे।

CO2 छात्रों में विभिन्न क्षेत्रों के विषय से संबंधित अनुवाद कौशल, शब्दों का ज्ञान, वाक्य भेद, लिंग एवं वचन परिवर्तन की कला से भाषागत ज्ञान में वृध्दि कर सकते हैं।

CO3 कहानियों को पढकर समता करुणा आत्मीयता संवेदना समर्पण जैसे मानवीय मूल्यों का निर्माण होगा, जिसके कारण व्यक्ति समाज और देश की स्थिति में सुधार कर सकेंगे।

CO4 छात्रों में अपने देश तथा भाषा के प्रति प्रेम निर्माण होगा, उनमें उत्साह उमंग उल्लास विश्वास पुरुषार्थ कर्तव्यनिष्ठा की भावना को प्रस्तुत कर सकते हैं।

Course (Paper) Name and No.: Ancillary Hindi (Optional Hindi) _: UAR2HN1

CO1 उपन्यास के अध्ययन से छात्रों में मानवीय जीवन की अच्छाइयों और बुराइयों को देखने के दृष्टि निर्माण कर सकेंगे ।

CO2 उपन्यास के कारण कला, संस्कृति, दर्शन तथा अंतर्गत एवं बाह्यगत मानवीय स्वभाव, कर्म और भोग के प्रति मानवीय आश्वस्थ्ता को स्पष्ट कर सकेंगे ।

CO3 हिंदी साहित्य की विभिन्न विधाओं के अध्ययन से विषम परिस्तितियों से जूझते हुए जीवन जीने की जिजीविषा, भारतीय नौकरशाही व्यवस्था, किसानों की दूरावस्था, सरकारी योजनाओं का अपव्यय, भारतीय वीर सैनिकों के कर्तव्य आदि का समीक्षात्मक अध्ययन करने की समझ प्राप्त होगी ।

CO4 भारतीय प्राकृतिक तथा मानव निर्मित आपदाओं, आरोग्य व्यवस्था, अशिक्षा के परिणामों, विश्व संस्कृति के ज्ञान, प्रेम की भाषा का महत्व, भारतीय दलितों की स्थिति, हिन्दू-मुसलमान दंगा-फसाद में बिखरता मानवीय एवं पारिवारिक जीवन के अर्थ को समझने एवं उसके उपायों को खोजने की दृष्टि निर्माण होगी ।

E. History

Course (Paper) Name and No.: History of Modern India (1857 C.E. to 1947C.E.)

CO1 Illustrate the seeds of Nationalism where sown in socio-religious reform movements.

CO2 Analyze the role of western education and Newspapers in freedom struggle in India

CO3 Learners will developed idea about the impact of the British Rule on Indian Economy.

CO4 To assess the development of Subaltern factors in the History of Modern India.

F. Marathi

Course (Paper) Name and No.: Marathi Compulsory

CO1 विद्यार्थ्यांना नामवंत लेखकांच्या लेखनाचा परिचय होईल

CO2 विद्यार्थ्यांना श्रवण, वाचन, भाषण, लेखन, इ. भाषिक कौशल्ये आत्मसात होतील

CO3 शालेय शिक्षणात नापास झालेली माणसेही जीवनात उत्तुंग भरारी कसे घेतात ते समजेल

CO4 चरित्र, आत्मचरित्र, आत्मकथा इ. साहित्यातील लेखनप्रकाराची ओळख होईल

Course (Paper) Name and No.: Marathi (Optional) Paper I

CO1 विद्यार्थ्यांना कविता या वांड्मय प्रकाराचा परिचय होईल

CO2 विद्यार्थ्यांना मराठी साहित्यातील प्रमुख कवींचा व त्यांच्या कवितांचा परिचय होईल

CO3 विद्यार्थ्यांना मराठी साहित्यातील विविध प्रवाहांचा परिचय होईल

CO4 विद्यार्थ्यांना मराठीतील सर्जनशील लेखनाची पूर्व तयारी होईल

G. Political Science

Course (Paper) Name and No.: Indian Political Process

CO1 Illustrate Indian Federal System, changing dynamics in centre-state relations and demand for greater autonomy

CO2 Analyse the political parties, elections, election machinery, and electoral reforms

CO3 Perceive caste, religion and regionalism in politics

CO4 Elaborate challenges to national security i.e., criminalization of politics, global terrorism, naxalism

H. Rural Development

Course (Paper) Name and No.: Rural Development Sem II _UAR1RD1

CO1 Describe the background and concept of Rural Governance, Rural Economy and Rural Infrastructure.

CO2 Explain the key issues of Rural Communities, Role of Rural Infrastructure and Rural Economy, Rural Governance.

CO3 Identify the problems of rural society, key issues of rural communities and Rural economy.

CO4 Classify the functions of rural governance, Rural Economy, Rural Infrastructure and problems of rural communities

I. NCC

Course (Paper) Name and No.: Foundation Course in NCC II

CO1 Describe about the social, rural development projects, & civil defense organization.

CO2 Compare different adventure activities, health hygiene & sanitation in daily life.

CO3 Illustrate the knowledge of different weapons its use and handling.

CO4 Judge the distance by using Map reading, field craft and battle craft

J. NSS

Course (Paper) Name and No.: Foundation Course in National Service Scheme

CO1 Demonstrate the leadership and better communication skills during the camps and any allied activities.

CO2 Apply the knowledge about camping whilst camping.

CO3 Utilize the information about the surveys whilst designing the survey.

CO4 Illustrate the working of an NGO.

SEMESTER III

A. Economics

Course (Paper) Name and No.: (Economics) Public Finance

CO1 Find out the public Finance and Private

CO2 Compare Budget and Taxation

CO3 Distinguish between public Expenditure and debt

CO4 Interpret the Indian Public Finance

Course (Paper) Name and No.: (Economics) Demography

CO1 Show the nature of Indian Population

CO2 Relate the theories of population

CO3 Assess the sources of demographic data in India

CO4 Choose the appropriate methods of calculation

Course (Paper) Name and No.: (Economics) Macro Economics

CO1 Define the concepts of Macro Economics and National Income

CO2 Interpret the theories of consumption and investment

CO3 Distinguish between supply of money and demand for money

CO4 Compare the banking structure in India

B. English

Course (Paper) Name and No.: Literature in English_UAR3EG2

CO1 Select the literary masterpieces and gems of Indianwriting in English and flourish necessary skills

CO2 Identify the significance of Indian literatures inEnglish and its manifold relevance in the dynamic world

CO3 Evaluate pluralistic approach and philosophicalperspectives of Indian Literatures in English

CO4 Adapt moral, ethical and social values to besocially responsible and intellectually alive

Course: American Literature _ _UAR3EG3

CO1 Identify literary terms of twentieth century ofAmerican Literature

CO2 Analyse themes reflected in African Americanfiction

CO3 Perceive gender equality through prominentstories pertaining to American literature

CO4 Relate human values depicted through literaryworks in the realm of American Literature

C. Geography

Course (Paper) Name and No.: (Geography) Introduction to Climatology II

CO1 Understand the nature, scope, branches and concepts of climatology as well as the structure of atmosphere.

CO2 Understand the weather phenomena, winds and upper air circulation.

CO3 Understand the concept of humidity, condensation, precipitation and analyze the distribution of rainfall.

CO4 Understand the cyclones, Indian monsoon and evaluate the climate change issues.

CO5 Read and interpret the weather map and to construct the climatic diagrams.

Course (Paper) Name and No.: (Geography) Physical Geography of India III

CO1 Understand the physiographic divisions of India and its importance.

CO2 Understand and analyze the drainage system in India.

CO3 Explain the types of seasons, soil and forest in India and to evaluate the conservation methods.

CO4 Classify and explain the minerals and energy resources in India.

CO5 Mark the geographical features in the map of India and construct the map scale.

D. Hindi

Course (Paper) Name and No.: Medieval and Modern Poetry, Paper-II _UAR3HN2

CO1 Explain uniqueness in the writing styles used by medieval poets.

CO2 Relate and summarise the prevailing social scenarios expressed in medieval and modern poetry

CO3 Distinguish the uniqueness in the language of poetry of Medieval and Modern era. Eg- Braj Bhasha, Avadhi, Khadi Boli etc.

CO4 Categorise the poetry of Medieval era Eg. Saints - Sufi and Ram - Krishna Bhakti poetry

Course (Paper) Name and No.: Modern Prose _UAR3HN3

CO1 उपन्यास का अध्ययन करने से छात्रों में भारतीय समाज में किसानों का हो रहा शोषण, दलितों की दीन-हीन दशा, जमींदारों के अत्याचार, उत्पीडन, शोषण, आपसी ईर्ष्या-द्वेष भावना, समाज की परिवर्तनशील अवस्था, नेताओं की स्वार्थी वृत्ति, किसानों की साम्यवाद के प्रति सहज आस्था की भावना को समझने की क्षमता में वृद्धी होगी।

CO2 उपन्यास का अध्ययन करने से छात्रों में तत्कालीन राजनीतिक, साम्राज्यवादी नीति, भारतीय समाज में चल रहा सामान्य लोगों का शोषण, उत्पीडन, स्वतन्त्रता प्राप्ति में लोगों का योगदान, भारतीय रुपयों का अपव्यय किस प्रकार हो रहा हैं इन सभी बातों को संप्रेषित कर सकेंगे ।

CO3 हिंदी कहानिओं के अध्ययन करने से छात्र 'रघुकुल रीति सदा चली आई, प्राण जाये पर वचन न जाई' निश्चल प्रेम, प्रणपालक, त्याग और बलिदान भारतीय सड़ांध समाज-व्यवस्था, दलित अस्मिता, नारी अस्मिता, मध्यमवर्गीय समाज का खोखलापन, दो पीढ़ियों का संघर्ष को सुलझा सकेंगे ।

CO4 हिंदी कहानिओं के अध्ययन करने से छात्र भारतीय सौंदर्य चिन्तन, पाश्चात्य सौंदर्य चिन्तन, और मार्क्सवादी सौंदर्य चिन्तन के बीच निर्मित होते दलित सौंदर्य चिन्तन के विचार बिन्दुओं की परख कर सकेंगे।

E. History

Course (Paper) Name and No.: Ancient India from Earliest Times to 1000 AD

CO1 Students will have better understanding of ancient period of Indian history.

CO2 They will be able to trace the continuity and change in historical perspective.

CO3 To understand the spiritual philosophy related to life through the study of ancient India

CO4 It will induce students to history of India In chronological framework.

Course (Paper) Name and No.: Landmarks in World History II

CO1 The Learners will be able to understand the significant historical events of the world.

CO2 The Learners understand how the whole world came out of the medieval dark ages.

CO3 The learners was aware of the Revolutions which gave very important concepts to world.

CO4 To understand the effects of global change on human life.

F. Marathi

Course (Paper) Name and No.: Marathi Paper II

CO1 कादंबरी या साहित्यप्रकाराची तोंडओळख होईल

CO2 विद्यार्थ्यांच्या वांड्मयीन अभिरुचीचा विकास होईल

CO3 मराठी साहित्याभ्यासातून जीवनविषयक समज विकसित होईल

CO4 विद्यार्थ्यांमध्ये मराठी साहित्याबद्दलची अभिरुची विकसित करून कलाकृतीचा आस्वाद घेण्याची क्षमता वाढेल

CO5 नेमलेल्या कलाकृतीच्या संदर्भात साहित्य परंपरेचा स्थूल परिचय होईल

CO6 साहित्य आणि समाज यातील परस्परसंबंध समजावून घेता येईल

Course (Paper) Name and No.: Marathi Paper III

CO1 भाषेचे स्वरूप व कार्य, भाषेच्या अभ्यासाचे महत्व, भाषेच्या अभ्यासाचे प्रमुख अंगे समजून येतील

CO2 भाषा म्हणजे काय व तिचे मानवी जीवनातील कार्य व महत्व समजून येईल

CO3 भाषेचे यथोचित आकलन व वापर करण्याची क्षमता विकसित होईल

CO4 भाषेची निर्मिती प्रक्रिया समजण्यास मदत होईल

CO5 भाषेच्या वापराचे ज्ञान मिळेल

G. Political Science

Course (Paper II) Name and No.: Political Theory

CO1 Analyzing what is Political Theory meaning and scope and explaining the approaches to the Study of Political Theory – Traditional and Contemporary Approaches.

CO2 Assessing the theories of State, (Origin, Nature, Functions): Contract, Idealist, Liberal and Neo-Liberal Theories.

CO3 Explaining the Concept of nation, Factors of Nation, Civil society, Market.

CO4 Understanding basic concepts of Power and Authority and Legitimacy.

CO4 Understanding basic concepts of Liberty, Equality, Rights, Law and Justice.

CO6 Understanding basic concepts of Political Obligation and Right to Resist.

Course (Paper III) Name and No.: Public Administration

CO1 Explaining the meaning, nature, scope and evolution of Public Administration; Private and Public Administration.

CO2 Analyse the major Theories in Public Administration.

CO3 The Challenges in the discipline of Public Administration like New Public Administration (NPA), New Public Management (NPM)

CO4 Discussing Weberian theories of bureaucracy, Human Relation Theory (Elton Mayo), Scientific management Theory (F.W.Taylor).

H. Rural Development

Course (Paper) Name and No.: Rural Development II _UAR3RDII

CO1 Describe the concept, Reasons and components of Indian Rural Society, Problems of Weaker Section, Rural Social Institution and Social Change.

CO2 Identify the problems of Indian Rural Society, Rural social Institution, Modernization and Westernization.

CO3 Analyse the concept related to social change, changes in Society, Impact Rural Community on Urban Community.

CO4 Explain the concept related to social change, Reasons, Barriers in social change, Rural Social Institutions and Indian Rural Society,

Course (Paper) Name and No.: Rural Development III _UAR1RDIII

CO1 Describe the Basic concept, objectives, Components, Background of District Admiration, Revenue Administration, Law and Order, Judicial Machinery and Planning for Rural Development,

CO2 Examine the role of District and Revenue Administration, NGOS in Rural Planning, Law and Order and Judicial Machinery in Rural Administration.

CO3 Explain the Structure, Functions, Scope and Types of Districts and Revenue Administration, planning, Law and order and Judicial Machinery.

CO4 Discuss on Law and Order, Loknyayalaya, District Planning, Revenue and District Admiration.

I. NCC

Course (Paper) Name and No.: Foundation Course in NCC III

CO1 Describe National integration &environmental conservation

CO2 Explain concepts of personality development & Leadership

CO3 Classify different movements of foot drill

CO4 Apply the knowledge weapon training & drill in military training

SEMESTER IV

A. Economics

Course (Paper) Name and No.: (Economics) Indian Economy

CO1 Define the various concepts of Indian economy

CO2 Explain the agriculture policies.

CO3 Identify the various programmes for Industrial Development

CO4 Examine the role and nature of service sector in India

CO5 Define the various concepts of Indian economy

Course (Paper) Name and No.: (Economics) Demography

CO1 Explain the concept of fertility, Nuptiality, Mortality and Life Table

CO2 Choose the theories of Migration

CO3 Examine urbanization and problems of urbanization in India

CO4 Evaluate the population Policy

Course (Paper) Name and No.: (Economics) Macro Economics

CO1 Find the inflation in Indian economy

CO2 Relate the monetary and fiscal policy in India

CO3 utilize post Keynesian Theories of Economics

CO4 Examine the relationship between domestic economy and External sectors

B. English

Course: Indian Literature in English_UAR4EG2

CO1 Explain the uniqueness of Indian Literature inEnglish

CO2 Develop literary skills, techniques and multiple ways of interpretation of prominent texts of Indianwriters

CO3 Compare indigenous and the independent status of Indian writing in English in the realm of world Literature

CO4 Improve constant habits of learning andappreciation of Indian classics in English

Course: American Literature_UAR4EG3

CO1 Classify literary concepts and salient tenets of American dream incorporated in literary genres

CO2 Develop quest for materialism through theprotagonist delineated in American drama

CO3 Examine racial discrimination represented inAfrican American poetry

CO4 Explain feministic ideology depicted in Americanpoetry

C. Geography

Course (Paper) Name and No.: (Geography) Introduction to Oceanography II

CO1 Explain the origin, nature, scope and branches of Oceanography.

CO2 Explain the structure of ocean floor, composition, temperature and salinity of ocean water.

CO3 Understand the tide formation and ocean currents. Evaluate the effects of ocean currents.

CO4 Explain the oceanic phenomenon and the marine ecosystem.

CO5 Mark the geographical features in the map and to read and interpret the navigation charts bathymetrical maps.

Course (Paper) Name and No.: (Geography) Agriculture Geography of India III

CO1 Understand the nature, scope and approaches of Agriculture Geography. Explain the importance salient features of agriculture in India.

CO2 Explain the factors, types, major crops and problems of agriculture in India.

CO3 Understand the components and impacts of green revolution in India and to evaluate the present scenario of green revolution.

CO4 Explain the development of recent trends of agriculture in India.

CO5 Interpret the thematic maps and construct the statistical diagrams and graphs.

D. Hindi

Course (Paper) Name and No.: Hindi-II मध्ययुगीन एवं आधुनिक कविता_UAR4HN2

CO1 Explain uniqueness in the writing styles used in Ghazal written by Dushyant Kumar

CO2 Outline the prevailing key social and political issues of India covered in the Ghazals of Dushyant Kumar

CO3 Analyse the poems of different poets of Modern era and their writing styles

CO4 Categorise the poems of Modern era in different categories like Pryogvadi , Dalit vimarsh etc.

Course (Paper) Name and No.: Modern Prose _ UAR4HN3

CO1 नाटक का अध्ययन करके छात्र ऐतिहासिक त्रासदी के आधार पर समसामयिक द्वद्व, कलाकार के स्वाभिमान की रक्षा, अत्याचारों का विरोध करने की प्रेरणा, महाशिल्पी और शिल्पियों के संघर्ष का स्पष्टीकरण कर पायेगा।

CO2 नाटक यह विधा मानव –मन की उद्वेलित भावनाओं, रंगमंचीयता के विविध उपकरण, भारतीय संस्कृति, इतिहास, समकालीनता तथा मानवीय सत्य की आस्था को परिपुष्ट करने की क्षमता को वृधिगत कर पायेंगे।

CO3 एकांकी साहित्यिक विधा के अध्ययन से छात्र आधुनिक समाज की दिखावे की संस्कृति तथा समाज की विकृति, परंपरा और आधुनिकता के द्वद्व, जीवन में बनावटीपन को नहीं यथार्थ को महत्व, एक-दूसरे की भाव-भावनाओं का सम्मान, धुम्रपान के प्रति अपना मत प्रस्तुत कर सकेंगे ।

CO4 एकांकी साहित्यिक विधा के अध्ययन से छात्र मानसिक विकलता, धर्म के नाम पर धोखा, मानवीय विसंगतियाँ, आर्थिक असमानता, मजदूर वर्ग की पीड़ा, मूल्य हीनता, नारी पीड़ा, टूटते रिश्ते, संयुक्त परिवार में मुखिया का महत्व, आदि सामाजिक पहलुओं की आलोचना कर सकेंगे ।

E. History

Course (Paper) Name and No.: History of Ancient India

CO1 The course will enable the students to study the history of ancient India from an analytical perspective

CO2 It will acquaint the student with various approaches and interpretation of ancient history of India

CO3 The learners are made aware of the glorious era in the history of ancient India

CO4 The learners can be introduced to the art and architecture of south India

Course (Paper) Name and No.: Landmarks in World History

CO1 The syllabus will enable the students to critically analysis of totalitarian rules ress

CO2 The learners will understand about global events during two world wars and their impact on the world

CO3 They understand how arms race poses a threats to word peace and progress

CO4 Explaining the International Nationalism to students through this course

F. Marathi

Course (Paper) Name and No.: Marathi Paper II

CO1 चरित्र, आत्मचरित्र, आत्मकथन या साहित्य प्रकारच्या तात्विक घटकांचे व अंतर्गत फरकाचे ज्ञान होईल

CO2 आधुनिक मराठी साहित्यातील निवडक चरित्र, आत्मचरित्र, आत्मकथा यांचा आकलन, आस्वाद आणि मूल्यमापन करण्याची क्षमता विद्यार्थ्यांमध्ये निर्मल होईल

CO3 चरित्र, आत्मचरित्र, आत्मकथन यातील वास्तव आणि कल्पित यातला फरक समजेल

CO4 चरित्र, आत्मचरित्र, आत्मकथन यातून माणसाचे जीवन संघर्ष समजून येईल

Course (Paper) Name and No.: Marathi Paper III

CO1 स्थानिक बोलीभाषेची माहिती होईल

CO2 बोलीभाषेतील साहित्य, संस्कृतीची अभिरुची निर्माण होईल

CO3 बोलीभाषेतील उच्चार प्रक्रिया, म्हणी, वाक्यप्रचार, शब्दसंग्रह इ. चा परिचय होईल

CO4 वेगवेगळ्या बोलीभाषेतील अंतर्गत फरक समजून येईल

CO5 बोलीभाषा आणि प्रमाण भाषा यातील फरक समजण्यास मदत होईल

G. Political Science

Course (Paper II) Name and No.: Political Values and Ideologies

CO1 To demonstrate knowledge of key Ideology and concepts.

CO2 To understand the nature, methods and significance of political values and Ideology

CO3 Examining the basic Tenets of Marxism and Fascism.

CO4 Classifying the three waves of Feminism.

Course (Paper III) Name and No.: Indian Administration

CO1 Explaining the meaning, nature, scope and evolution of Indian Administration.

CO2 Analyzing the major concept in Indian Administration.

CO3 Understanding the concept of District Administration in India.

CO4 Analyzing the Civil Service in India. Explaining the Planning and Planned Administration in India. Continuity and Change in Indian Administration.

H. Rural Development

Course (Paper) Name and No.: Rural Development II: UAR4RDII

CO1 Describe the Basic concept, objectives, Components, Importance, Functions of Agricultural Development, sources of Rural Employment and Tourism Development.

CO2 Identify the Areas of Rural Upliftment, problems in Tourism Industry, Agro processing Industry and Rural Marketing and Finance.

CO3 Examine the role of National Agricultural policy and food security, KVK and Agricultural University, Agro based Industries, Commerce and Trade and areas of Rural upliftment.

CO4 Explain the Sources of Rural Employment, Areas of Rural Upliftment, importance Agriculture Development and tourism development.

Course (Paper) Name and No.: Rural Development III_Course Code: UAR4RDIII

CO1 Describe the Historical Background, Role of laws related to Rural Development

CO2 Examine the role of Panchayat Act, Land Reforms and Law related Rural and Tribal Area.

CO3 Explain the Panchayat Raj Act in Maharashtra, Land Reforms and Laws related to Tribal and Rural Area.

CO4 Discuss the panchayat raj act in Maharashtra, Tribal and Rural Act, Land Reforms Legislation

I. NCC

Course (Paper) Name and No.: Foundation Course in NCC IV

CO1 Describe the concepts of disaster management, social awareness& Community development.

CO2 Explain about health hygiene, first aid & home nursing.

CO3 Classify drill & drill with arms

CO4 Apply the knowledge of weapons, map reading in military training.

SEMESTER V

A. Economics

Course (Paper) Name and No.: Micro Economics -IV

CO1 Learners understand the monopoly situation.

CO2 Learners are able to discriminate how the monopoly and oligopoly.

CO3 Learners are studied the equilibrium concept and social welfare of the people.

CO4 Learners are studied the Nash equilibrium

Course (Paper) Name and No.: Economics of Development -V

CO1 Learners will get familiar with concepts of growth and development.

CO2 Learners will able to understand the role of factors of development.

CO3 Learners will study effects of poverty, inequality on development.

CO4 Learners will think about sustainable development

Course (Paper) Name and No.: Industrial & Labour Economics -VI

CO1 Learners will get with the nature of industries in India.

CO2 Learners will know factors affecting location of industries and regional imbalance.

CO3 Learners will aware about factors affecting of industrial productivity and sickness.

CO4 Learners will get with history of developmental of industries in India.

Course (Paper) Name and No.: Economics of Agriculture and cooperation -VI

CO1 To get the role of agriculture in economic development.

CO2 To know the institutional and non-institutional sources of credit and micro finance.

CO3 To recognize the importance of marketing in agriculture.

CO4 To understand various agriculture price and policy

Course (Paper) Name and No.: Research Methodology - VII

CO1 Learners will study the concepts of research.

CO2 Learners will study the elements of research methodology.

CO3 Learners will study the different sources of data for research.

CO4 Learners will study the process and analysis of data

Course (Paper) Name and No.: Environmental Economics - VIII

CO1 Learners will study the environment and its importance in development.

CO2 Learners will study the various environmental policies for sustainable development.

CO3 Learners will study about environmental improvement.

CO4 Learners will study the environmental problems.

Course (Paper) Name and No.: History of Modern Maharashtra (1818 CE-1960)

CO1 Learners will acquaint a deeper and more inclusive understanding of landmarks events, personality.

CO2 To nature of pre-British education can be explained to the students.

CO3 The students can study the movements of the 19th century.

CO4 Political history of Maharashtra can be stressed.

Course (Paper) Name and No.: History of Contemporary India (1947CE-2000CE)

CO1 Students will acquire a deeper and more preclusive understanding of changes, Personality and themes in modern Indian history

CO2 To explain to the students importance of Foreign Policy for the Development for the Country.

CO3 To Explain to the learners how socio-economic development took place in the History course of Contemporary India.

CO4 Understanding the major trends of Modern India to the Learners.

B. English

Course (Paper) Name and No.: 16th to 18th Century English Literature IV_UAR5EG4

CO1 Explain salient literary movements duringElizabethan Era

CO2 Identify characteristics of Jacobean period anddevelopment of poetry and drama

CO3 Analyse characters, themes and dramatic devicesin the world-famous tragedy of Shakespeare

CO4 Perceive depiction of human values incorporated in different genres of English literature during 16thcentury

Course (Paper) Name and No.: Literary Criticism V _UAR5EG5

CO1 Define critical terms with suitable examplesbelonging to English literature

CO2 Explain the relationship between literature andliterary criticism

CO3 Appraise distinguished functions of literarycriticism

CO4 Develop the skill of identification of meter used inEnglis prosody

Course (Paper) Name and No.: Grammar and Art of Writing VI _UAR5EG6

CO1 Identify vowel, consonants and morpheme of theEnglish language

CO2 Classify word classes and different phrases ofEnglish language

CO3 Evaluate nature of mode, tenor and domain oflanguage

CO4 Develop the mechanics of print media

Course (Paper) Name and No.: 19th Century English Literature (VII)_UAR5EG7

CO1 Explain characteristics and growth of romanticismas literary movement

CO2 Identify features of Romanticism depicted inpoems

CO3 Examine the depiction of women characters inRomantic novel

CO4 Justify the relation between nature and manthrough literature

Course (Paper) Name and No.: 20th Century British Literature_UAR5EG8

CO1 Demonstrate the importance of literary texts andmovements and their different linkages

CO2 Identify the multiplicity of literary texts andrelevance to 20th century Britain

CO3 Interpret social, political and historical contexts of literary texts and interconnectivity with significantphilosophical trends of the world

CO4 Discuss the comprehensive and rebellious nature of 20th Century British Literature and its corelationwith shifting nature of British society

Course (Paper) Name and No.: Literature of Protest (IX)_UAR5EG9

CO1 Explain the distinctiveness and new modes of literary expressions which rejects traditional literary aesthetics

CO2 Inspectthe dehumanized practices, power structures and divide in the Hindu social order

CO3 Criticize oppressive systems of caste and wretched condition of Dalit's lives and applaud the skills of Dalit writers

CO4 Develop protest against brutality and participate actively in the process of making healthycommunity

C. Geography

Course (Paper) Name and No.: Geography of Settlements_ (UAR5GE4)

CO 1 Understand the importance, nature and scope of Settlement Geography and types of settlements.

CO 2 Explain the origin, growth and classification of rural settlements.

CO 3 Explain and evaluate the distribution, density and variations in rural settlement patterns and morphology in India.

CO 4 Explain the origin, growth and classification of urban settlements and examine the models of urban settlement.

Course (Paper) Name and No.: Geography of Maharashtra_ (UAR5GE5)

CO 1 Understand the location, administrative setup and geographical personality of Maharashtra.

CO 2 Explain the drainage and climate in Maharashtra.

CO 3 Interpret the population growth, distribution and structure of population and analyze the population data.

CO 4 Explain the agriculture, fisheries and livestock resources in Maharashtra and to evaluate the recent issues and policies of them.

Course (Paper) Name and No.: Population Geography_ (UAR5GE5)

CO 1 Understand the nature, scope, importance of Population Geography and explain the relation with other social sciences.

CO 2 Explain and analyze the structure, growth, density and distribution of population in India and World.

CO 3 Explain and evaluate the population theories.

CO 4 Understand the causes, consequences of migration and to explain the trends of migration in India.

Course (Paper) Name and No.: Tools and Techniques in Geography for Spatial Analysis-I (Practical)_ (UAR5GE6)

CO 1 Demonstrate an understanding the basic concepts of projection and able to construct the projections.

CO 2 Explain the basic elements of map and able to delineate the water shade on toposheet and longitudinal profile of river.

CO 3 Explain the basics of topographical maps and interpret the different topographical maps.

CO 4 Prepare the thematic maps by conventional methods

Course (Paper) Name and No.: Regional Planning and Development_(UAR5GE7)

CO 1 Understand the concept, nature and problems associated with Regional Planning

CO 2 Explain the concept, types of region and demarcate the planning regions.

CO 3 Understand the concept and indicators of development and to explain the strategies and rregional disparities in development.

CO 4 Explain the planning and planning regions of India.

Course (Paper) Name and No.: Geography of Resources_(UAR5GE8)

CO 1 Understand the concept, factors, importance and classification of resources.

CO 2 Explain the resource consumption pattern and conservation measures of natural resources.

CO 3 Explain the distribution, consumption of water and forest resources and evaluate the problems and Conservation methods of water, forest resources.

CO 4 Explain the distribution, consumption of soil and mineral resources and evaluate problems the conservation methods of soil and mineral resources.

Course (Paper) Name and No.: Geography of Health_(UAR5GE8)

CO 1 Understand the nature, scope, approaches and evolution geography of Health Geography.

CO 2 Understand the Causes, and effects of air, water, radioactive and plastic pollution and suggest the solutions for them.

CO 3 Explain the weather related diseases and analyze the case studies of communicable and non-communicable diseases.

CO 4 Understand the linkages of health with environment and health related issues.

CO 5 Understand the distribution of hhealth care facilities and analyse the health care policies and health organisations in India.

Course (Paper) Name & No.: Geography of Disaster Mitigation & Management(UAR5GE8)

CO 1 Understand the concept, types and impacts of disaster.

CO 2 Explain the concept and role of national and international organisations for disaster management.

CO 3 Understand apply the methods of disaster management at pre and post disaster stage.

CO 4 Explain and apply the methods for the disaster management of earthquake, flood, cyclone and famine.

CO 5 Explain the causes, effects and management of industrial hazards, terrorism, wild fire and accidents.

Course (Paper) Name and No.: Geospatial Technology _ (UAR5GE9)

CO 1 Demonstrate an understanding the concept, components of Geospatial Technology.

CO 2 Explain the concepts of DEM and able to analyze and interpret the aerial photographs and satellite imageries.

CO 3 Explain the concepts and types of GPS and able to use the applications GPS as well as capable to survey through GPS.

CO 4 Use of image/map in GIS software's and Geo-referencing.

CO 5 Create the maps by using GIS software's.

D. Hindi

Course (Paper) Name and No.: Hindi Sahitya Ka Itihas, (Adhunik kal) Paper-IV_ UAR5HN4

CO1 हिंदी साहित्य के इतिहास के पाठ्यक्रम से छात्रों को इतिहास के लेखन परंपरा का विभिन्न कालखण्डों के नामकरण एवं समय सीमा का तथा युगीन परिस्थितियों का आकलन कर सकेगे।

CO2 वीरगाथाकालीन नाथ साहित्य की रचनाओं, कवियों, प्रवृत्तियों से प्रेम एवं वीर, साहसी भावनाओं की छात्रों में वृद्धी होगी।

CO3 रीतिकाल और भक्तिकालीन साहित्य के अध्ययन से छात्रों में नीति के दर्शन, कर्म करने की प्रेरणा, समाज में व्याप्त विषमताओं के विरुद्ध अपनी आवाज को समाज के सामने प्रस्तुत कर सकेंगे ।

CO4 भक्तिकाल के साहित्य से जाति-पाति, धर्म की भेद-भावना नष्ट होगी, गुरु का महत्व उसकी विभिन्न शाखाओं, विशेषताओं का ज्ञान होगा, उसमें निहित आदर्श विचारों एवं नैतिक मूल्यों के प्रति प्रेम होगा एवं शुद्ध आचरण को स्पष्ट कर पायेंगे।

Course (Paper) Name and No.: Post-Independence Hindi Literature _UAR5HN5

CO1 Explain various social messages and values expressed in drama – Khajurao Ka Shilpi and Rashmirathi
नाटक खजुराहो का शिल्पी और रश्मिरथी में व्यक्त विभिन्न सामाजिक संदेशों और मूल्यों की व्याख्या करना |

CO2 Identify the human characteristics displayed by various characters in these drama and poetry
इन नाटक और कविताओं में विभिन्न पात्रों द्वारा प्रदर्शित मानवीय विशेषताओं को पहचानना|

CO3 Analyse and categorise the writing styles of post-independence writers and their thought process
स्वतंत्रता के बाद के लेखकों की लेखन शैली और उनकी विचार प्रक्रिया का विश्लेषण और वर्गीकरण करना|

CO4 Critically evaluate and explain the post-independence literature
स्वतंत्रता के बाद के साहित्य का समालोचनात्मक मूल्यांकन और व्याख्या करना|

Course (Paper) Name and No.: Information Technology in Hindi_UAR5HN6

CO1 इस पाठ्यक्रम के अध्ययन से छात्र सूचना प्रौद्योगिकी के विकास एवं चुनौतियां, समस्याएं, समाधान तथा हिन्दी में उसके उपयोग को समझ सकेंगे।

CO2 सूचना प्रौद्योगिकी से भारतीय समाज जीवन में सकारात्मक, नकारात्मक प्रभाव, शिक्षा के क्षेत्र में योगदान, उसका ग्रामीण अर्थव्यवस्था पर प्रभाव, भारतीय समाज जीवन में परिवर्तन की आलोचना कर पायेंगे ।

CO3 कंप्यूटर पर हिन्दी में कामकाज, इंटरनेट पर हिंदी में विज्ञापन, मेल, ब्लॉग, ई-पत्रिकाएँ तथा रोजगार की विविध संभावनाओं के महत्व को जानेंगे ।

CO4 सायबर अपराध, सुरक्षा की चुनौतियाँ, सायबर शिक्षा का महत्व एवं संवैधानिक प्रावधानों से समझने की शक्ति प्राप्त होगी ।

Course (Paper) Name and No.: Literary Criticism: Prosody & Rhetoric's_UAR5HN7

CO1 काव्यशास्त्र के पाठ्यक्रम का अध्ययन करने से छात्रों को काव्य की प्रचलित संस्कृत, हिंदी, अंग्रेजी की परिभाषाओं से तीनों भाषाओं का ज्ञान होगा तथा काव्य के प्रयोजन, हेतु एवं तत्वों को समझेंगे जिसके कारण छात्रों में कल्पनाशिलता एवं भाषा शैली की क्षमता निर्माण हो सकेगी ।

CO2 विविध साहित्यिक छंदों के अध्ययन से विषयवस्तु एवं प्रसंगों के अनुसार छंदों में काव्य सृजन कला विकसित कर सकेंगे।

CO3 छात्रों में साहित्य की विभिन्न पद्य विधाओं के अध्ययन से आलोचना करने, समीक्षा करने की कौशल निर्माण होंगे इसके कारण वे भविष्य में उत्कृष्ट आलोचक निर्माण होंगे।

CO4 कला की परिभाषा, भेद, प्रयोजन तथा कला और साहित्य के अंतर्संबंध से परिचय हो सकेंगे।

Course (Paper) Name and No.: Linguistics Hindi Language & Hindi Grammar_UAR5HN8

CO1 Describe various concepts of language and linguistics
भाषा और भाषाविज्ञान की विभिन्न अवधारणाओं का वर्णन करना|

CO2 Apply the concepts of introductory Hindi grammar and linguistics
परिचयात्मक हिंदी व्याकरण और भाषाविज्ञान की अवधारणाओं को लागू करना|

CO3 Classify the sound of alphabets from the pronunciation's aspect

उच्चारण की दृष्टि से हिंदी वर्णो का वर्गीकरण करना |

CO4 Discuss the reasons behind changing pattern seen in language over period of time

समय के साथ देखे जाने वाले भाषा में परिवर्तन के कारणों पर चर्चा करना |

Course (Paper) Name and No.: Mass Media_UAR5HN9

CO1 Explain the origin and evolution of traditional and Modern Mass Media

पारंपरिक और आधुनिक जनसंचार माध्यमों की उत्पत्ति और विकास की व्याख्या करना|

CO2 Describe various operational aspects of Mass Media

मास मीडिया के विभिन्न परिचालन पहलुओं का वर्णन करना|

CO3 Utilise knowledge of Hindi in creative writing such as scripts, interviews, news writing etc.

रचनात्मक लेखन जैसे स्क्रिप्ट, साक्षात्कार, समाचार लेखन आदि में हिंदी के ज्ञान का उपयोग करना ।

CO4 Distinguish various traditional and modern platforms of mass media and their relevance, features and applications along with impact

विभिन्न पारंपरिक और आधुनिक जनसंचार माध्यमों की प्रासंगिकता, विशेषताओं और अनुप्रयोगों के साथ-साथ प्रभाव में अंतर करना|

E. History

Course (Paper) Name and No.: History of Medieval India(1000 CE-1526CE)_UAR5HS4

CO1 The students will learn the Sultanate rule and the history of Vinjaynagar and Bahamani Kingdom.

CO2 Students can study the socio-economic, cultural and political contribution of Medieval India

CO3 Students will get knowledge about the art and architecture of Medieval India.

CO4 In the curriculum of the Medieval India, students get guidance from within the workings of the rulers.

Course (Paper) Name and No.: History of Modern Maharashtra(1818 CE-1960)_UAR5HS5

CO1 Learners will acquaint a deeper and more inclusive understanding of landmarks events, personality.

CO2 To nature of pre-British education can be explained to the students.

CO3 The students can study the movements of the 19th century.

CO4 Political history of Maharashtra can be stresed.

Course (Paper) Name and No.: Introduction to Archaeology_UAR5HS6

CO1 The learners will acknowledge about Archaeology and its importance in History.

CO2 They will get knowledge about Epigraphy and its correlation with History.

CO3 They will understand importance of Numismatic in reorganisation of history.

CO4 They will know opportunities in field of Archaeology.

Course (Paper) Name and No.: History of the Marathas (1630 CE-1707CE) _UAR5HS7

CO1 Understand how the administrative system of Royal Period is useful in present time.

CO2 They will know the process of consolidation of Maratha Samrajya and successor of Shivaji Maharaj.

CO3 Students will learn significance of regional history.

CO4 It will enhance their perception of 17th century India in context of Maratha history

Course (Paper) Name and No.: History of Contemporary World_UAR5HS8

CO1 The students will comprehend the important events took place after Second World War period in the world and it's influenced in the present world politics.

CO2 Students will gained knowledge of world events.

CO3 Students will acknowledged about the various movements world History.

CO4 Students will understood the major trends in 20th century.

Course (Paper) Name and No.: Research Methodology and Sources of History_UAR5HS9

CO1 Students will be able to learn methods in research writing and understand the new trends in historical research.

CO2 The students developed a research approach.

CO3 Historical Research can help students understand the Authenticity and Creadibality.

CO4 Students can study the Sources of History through Indian Historiography.

SEMESTER VI

A. Economics

Course (Paper) Name and No.: Macro Economics - IV

CO1 To study the goods market and the open economy.

CO2 To study the financial market.

CO3 To study the exchange rate crisis.

CO4 To study the international monetary situation

Course (Paper) Name and No.: International Economics - V

CO1 Learners are studied the importance of international economics.

CO2 Learners are studied the various modern theories of international trade.

CO3 Learners are learned how trade is an engine of economic growth.

CO4 Learners understand the trade policy and regionalism

Course (Paper) Name and No.: Industrial &Labour Economics - VI

CO1 Learners will study the nature of labour market.

CO2 Learners will get with past, present and future of trade unions.

CO3 Learners will be aware about industrial relations and its measures.

CO4 Learners will get ways of labour welfare and social security

Course (Paper) Name and No.: Economics of Agriculture and cooperation -VI

CO1 To understand the important feature of co-operation.

CO2 To get need, structure and progress of co-operative finance.

CO3 To know the role and types of co-operative agro Industries.

CO4 To know the role of co-operative organization in India

Course (Paper) Name and No.: Research Methodology - VII

CO1 Learners will study statistical applications in research.

CO2 Learners will study index numbers.

CO3 Learners will study hypothesis formulation and testing.

CO4 Learners will study research report writing

Course (Paper) Name and No.: Development Theory and Experience -VIII

CO1 Learners will study the relation between demography and development.

CO2 Learners will get information structural transformation.

CO3 Learners will get knowledge about land, labour and credit market.

CO4 Learners will know the importance of environment and development.

Course (Paper) Name and No.: International trade policy and practice -IX

CO1 Learners will understand the difference between interregional and international trade.

CO2 Learners will understand the GATT, WTO and Doha round.

CO3 Learners will understand the international financial institutions and debt problem.

CO4 Learners will study the foreign capital flow in economy

B. English

Course (Paper) Name and No.: Literary Criticism_UAR6EG5

CO1 Explain literary movements with suitableillustrations through literary text

CO2 Experiment with New criticism as a criticalapproach

CO3 Analyse nature, features and growth of feminismand its application to literature

CO4 Develop the technique of appreciation of a poemon the basis of practical criticisr

Course (Paper) Name and No.: Grammar and Art of Writing_UAR6EG6

CO1 Identify structures of English language

CO2 Use the correct grammatical structures of English language

CO3 Analyse various rhetorical devices in English language

CO4 Design advertisement through effective use of language

Course (Paper) Name and No.: 19th Century English Literature _UAR6EG7

CO1 Recognize impact of industrial revolution onVictorian Literature

CO2 Identify themes and poetic devices employed inVictorian poetry

CO3 Examine social concerns represented in Victorianfiction

CO4 Asses morality present through Victorian literaryworks and its application

Course (Paper) Name and No.: 20th Century British Literature_UAR6EG8

CO1 Explain the contribution of well-known precursorsand literary genres of Britain after the catastrophicconditions of war

CO2 Identify the distinctiveness and unconventional literary enterprise and passionate grief about loss of spiritualism and human values

CO3 Criticize the significant subject matters, evils ofwars and decline of value systems

CO4 Discuss the anti-traditional, innovative and experimental literary contribution and praise the unique literary talent

Course (Paper) Name and No.: 16th to 18th Century English Literature_UAR6EG9

CO1 Illustrate features of Restoration epoch andgrowth of drama

CO2 Distinguish between one's honour versus love represented in historical drama

CO3 Interpret prominent genres of poetry in Englishdeveloped during 18th century

CO4 Solve conflicts experienced by the protagonist andits application in real life

C. Geography

Course (Paper) Name and No.: Environmental Geography_ (UAR6GE4)

CO 1 Understand the nature, scope, importance and man-environment relationship in Environmental Geography.

CO 2 Explain the Structure, functions and types of ecosystem.

CO 3 Understand the concept, types, distribution and hotspots of biodiversity. Evaluate the threats and conservation methods of biodiversity

CO 4 Evaluate the environmental problems with their causes, effect and solutions.

CO 5 Understand the concept of Environmental management and Sustainable Development and motivate the student to apply the ecofriendly life style.

Course (Paper) Name and No.: Geography of Tourism and Recreation

CO1 Understand about nature, scope, development and factors of tourism development

CO2 Understand about infrastructure and ancillary services for tourism

CO3 They understand about types and impacts of tourism.

CO4 Understand Planning and organization about tourism

CO5 Understand the potential of tourism sectors in Maharashtra and India

CO6 Know about national tourism policy.

Course (Paper) Name and No.: Geography of Tourism and Recreation_ (UAR6GE5)

CO 1 Understand about nature, scope and components of tourism

CO 2 Analyze the new trends in tourism and impact of tourism.

CO 3 Explain the role of infrastructure and technology in tourism development.

CO 4 Explain planning of tourism and role of tourism organizations.

CO 5 Explain the potential of tourism in Maharashtra and evaluate the tourism policy of Maharashtra.

Course (Paper) Name and No.: Tools and Techniques in Geography for Spatial Analysis-II (Practical)

CO1 Understand the Meaning and types of data and its presentation.

CO2 Understand and able to solve the examples of measures of central tendency, dispersion and deviation and correlation, regression and hypothesis testing.

CO3 Able to collect and analysis of data sampling.

CO4 Able to collect the field data, its processing and writing of research report.

Course (Paper) Name and No.: Political Geography_ (UAR6GE5)

CO 1 Understand the nature, scope, historical development and recent trends in Political Geography. Explain the concepts of state, nation and nationalism.

CO 2 Explain the approaches and concepts in Political Geography.

CO 3 Explain the concept, distinction and functions and classification of frontiers and boundaries. Evaluate the disputes related with India's boundaries.

CO 4 Explain the Geostatic and Geopolitical views.

CO 5 Explain the concept, nature and approaches of Electoral Geography.

Course (Paper) Name and No.: Tools and Techniques in Geography for Spatial Analysis-II (Practical)_ (UAR6GE6)

CO 1 Demonstrate an understanding the types of data and able to draw the graphs.

CO 2 Solve the examples of measures of central tendency, dispersion and deviation.

CO 3 Solve the examples of correlation, regression and hypothesis testing.

CO 4 Calculate the point, line and area sampling.

CO 5 Collect the data and prepare the research report.

Course (Paper) Name and No.: Economic Geography _(UAR6GE7)

CO 1 Explain the nature, scope branches and approaches of Economic Geography.

CO 2 Explain and classify human economic activities.

CO 3 Explain the mineral resources and industrial development and evaluate the Weber's industrial location theory.

CO 4 Explain the importance and pattern of transport, international trade and trade organizations.

CO 5 Explain the levels of economic development and evaluate the impact of globalization, Special Economic Zones and related issues in India.

Course (Paper) Name and No.: Biogeography_(UAR6GE8)

CO 1 Explain the nature, scope, branches and approaches of Biogeography.

CO 2 Explain the Structure, components, functions and types of ecosystem and biosphere.

CO 3 Classify the plant community, biotic succession and major plant formation and biomes.

CO 4 Explain the marine biogeography, ocean habitats and island biogeography

CO 5 Explain the types, importance, loss and conservation of biodiversity.

Course (Paper) Name and No.: Social Geography_ (UAR6GE8)

CO 1 Explain the nature, scope, branches of Social Geography and concept of socio-cultural regions.

CO 2 Explain the race, religion, language and tribes in the world and distinguish between them.

CO 3 Explain the race, religion, language and tribes in India and distinguish between them.

CO 4 Evaluate the contemporary social issues in India.

CO 5 Analyse and evaluate the social welfare policies of government of India.

Course (Paper) Name and No.: Geography of Transport_ (UAR6GE8)

CO 1 Explain the concept, nature, scope and significance of Transport Geography.

CO 2 Explain and analyze the transport network system, efficiency of network and conflicting aspects of decision making.

CO 3 Explain the evolution of transport network, phases of growth and development of transport modes and analyse the comparative cost structures.

CO 4 Explain the concept of connectivity and accessibility and theories of transport.

CO 5 Evaluate the issues of transport development in India.

D. Hindi

Course (Course: Modern History of Hindi Literature _UAR6HN4

CO1 आधुनिककाल की विभिन्न रचनाओं एवं रचनाकारों के अध्ययन से छात्रों में साहित्य लेखन की क्षमता निर्माण होगी तथा वे अपने युग के अनुकूल एवं प्रसंग के अनुसार लेखन कार्य कर सकेंगे।

CO2 उस काल की सामाजिक-सांस्कृतिक और राजनीतिक स्थिति के संदर्भ में आधुनिक काल की विशेषताओं का तुलनात्मक विश्लेषण कर पायेंगे।

CO3 हिन्दी साहित्य के अध्ययन से छात्र आधुनिक काल के उद्भव के कारणों को स्पष्ट करने में सक्षम होंगे

CO4 हिन्दी साहित्य के प्रत्येक काव्य विधा एवं गद्य विधा के कालखंड को दिए गए नामों के महत्व और आधार को प्रस्तुत करने में सक्षम होंगे।

Course (Paper) Name and No.: Post Independence Hindi Literature_UAR6HN5

CO1 Explain the linkage between Mahabharata era and current scenario

महाभारत काल और वर्तमान परिदृश्य के बीच संबंध की व्याख्या करना|

CO2 Explain the life journey of revolutionary freedom figher Birsa Munda and his stand against the British rule in India.

क्रांतिकारी स्वतंत्रता सेनानी बिरसा मुंडा की जीवन यात्रा और भारत में ब्रिटिश शासन के खिलाफ उनके रुख की व्याख्या करना|

CO3 Analyse and categorise the writing styles of post-independence writers Dharamveer Bharti and Iqbal Durrani

स्वतंत्रता के बाद के लेखकों धर्मवीर भारती और इकबाल दुर्रानी की लेखन शैली का विश्लेषण और वर्गीकरण करना|

CO4 Critically evaluate the novel Gandhi Se Pehle Gandhi and poetry drama Andha Yug

उपन्यास गांधी से पहले गांधी और काव्य नाटक अंधा युग का आलोचनात्मक मूल्यांकन करना|

Course (Paper) Name and No.: Social Media __UAR6HN6

CO1 सोशल मीडिया के अध्ययन से पाठकों को इसके विकास, गुण, दोष एवं इसके विविध भेदों को समझ पायेंगे ।

CO2 इस पाठ्यक्रम के अध्ययन से छात्र सोशल मीडिया से प्रभावित भारत के विविध क्षेत्रों, इसकी प्रचलित भाषा, समाज एवं संस्कृति के अंतर्गत संबंधों तथा मुक्त अभिव्यक्ति के प्रति संवेदनशीलता विकसित होगी।

CO3 सोशल मीडिया के अध्ययन से छात्र सोशल मीडिया और कानून, बदलता हुआ भारतीय परिवेश, इसकी उपलब्धियां, उपयोगिता एवं यूनिकोड के माध्यम से हिंदी भाषा लिपि की वैश्विकता से परिचय प्राप्त कर सकेंगे ।

CO4 सोशल मीडिया के अध्ययन से छात्र इसमें हिंदी के प्रसार, प्रयोग, इसकी समस्याएँ, चुनौतियाँ, सीमाएँ तथा इसकी भारतीय समाज एवं संस्कृति को स्पष्ट कर सकेंगे।

Course (Paper) Name and No.: Literary Criticism : Prosody & Rhetoric's_UAR6HN7

CO1 इस पाठ्यक्रम के अध्ययन से छात्रों को शब्दशक्ति का अर्थ, स्वरूप, परिभाषा एवं उसके विभिन्न भेदों का परिचय प्राप्त होगा ।

CO2 छात्रों को रस के अर्थ, स्वरूप, उसके विविध अंग एवं भेदों से परिचय प्राप्त कराकर साहित्यिक रसास्वादन की क्षमता में वृध्दि होगी।

CO3 छात्रों में उपन्यास, कहानी, निबन्ध, नाटक, आत्मकथा, रेखाचित्र संस्मरण तथा जीवनी इन साहित्यिक गद्य विधाओं के अध्ययन से उनमें निहित विषयों से परिचित होंगे तथा उनमें लेखन, अभिनय एवं समीक्षा की क्षमता निर्माण कर सकेंगे ।

CO4 विभिन्न अलंकारों की परिभाषाओं एवं सोदाहरण विवेचनों से जहां एक ओर इनका ज्ञान वृध्दिगत होगा वहीं दूसरी ओर उनमें अलंकारिक भाषा शैली की क्षमता भी विकसित होगी, जिसके आधार पर छात्र भविष्य में अलंकारिक भाषा शैली में काव्य रचनाओं का सृजन भी कर सकेंगे।

Course (Paper) Name and No.: Linguistics Hindi Language & Hindi Grammar_UAR6HN8

CO1 Explain the origin and evolution of Hindi Language

हिंदी भाषा की उत्पत्ति और विकास की व्याख्या करना|

CO2 Classify different forms of Hindi Language.

हिन्दी भाषा के विभिन्न रूपों का वर्गीकरण करना|

CO3 Apply different forms of Hindi language and correct grammar.

हिंदी भाषा के विभिन्न रूपों और व्याकरण को लागू करना ।

CO4 Identify charactoristics and distinguish various ancient and medieval period languages i.e Sanskrit ,Pali, Prakrut, Apbhransh

विभिन्न प्राचीन और मध्ययुगीन काल की भाषाओं जैसे संस्कृत पाली, प्राकृत, अपभ्रंश की विशेषताओं को अलग कर पहचानना|

Course (Paper) Name and No.: Mass Media_UAR6HN9

CO1 Explain the use of language in various areas of Mass Media like Newspapers, Radio, Television and Cinema.

समाचार पत्र, रेडियो, टेलीविजन और सिनेमा जैसे मास मीडिया के विभिन्न क्षेत्रों में भाषा के उपयोग की व्याख्या करना ।

CO2 Identify various types of Advertisement platforms

विभिन्न प्रकार के विज्ञापन प्लेटफॉर्म की पहचान करना|

CO3 Explain various applicable SOPs/Guidelines governing the Advertisement vertical conduct

विज्ञापन आचरण को नियंत्रित करने वाले विभिन्न लागू दिशानिर्देशों की व्याख्या करना|

CO4 Discuss various aspects of documentary and short film making

वृत्तचित्र और लघु फिल्म निर्माण के विभिन्न पहलुओं पर चर्चा करना|

E. History

Course (Paper) Name and No.: History of Medieval India (1526CE-1707CE)_UAR6HS4

CO1 The students will get knowledge about the political power of Mughal and Maratha.

CO2 They will get knowledge about Administrative systems of Mughals.

CO3 Learner will understood the origin and growth of regional empire.

CO4 To study the impact on Medieval Indian Society and Polity.

Course (Paper) Name and No.: History of Contemporary India (1947CE-2000CE)_UAR6HS5

CO1 Students will acquire a deeper and more preclusive understanding of changes, Personality and themes in modern Indian history

CO2 To explain to the students importance of Foreign Policy for the Development for the Country.

CO3 To Explain to the learners how socio-economic development took place in the History course of Contemporary India.

CO4 Understanding the major trends of Modern India to the Learners.

Course (Paper) Name and No.: Introduction of Museology and Archival Science_UAR6HS6

CO1 The students will get encourage to pursue careers in the field of Museology.

CO2 They will Know Archaeology as well as understand the glorious cultural development and scope and value.

CO3 To understood the historical value of Archival Science.

CO4 They will acknowledged about the new trends of Digitization of Records.

Course (Paper) Name and No.: History of the Maratha - Peshwa Period(1707CE- 1818CE)_ (UAR6HS7)

CO1 Students will be able to analyse the Marathas polices of expansion and its consequences.

CO2 They will understand the role played by the Marathas in the 18th century India.

CO3 To follow the various personalities of the Peshwa Period.

CO4 Students can study the features of administration of Peshwa Period.

Course (Paper) Name and No.: History of Asia (1945 CE- 2000CE)_UAR6HS8

CO1 The students will get knowledge of transformation of China under Mao Zedong and Deng Xiaoping.

CO2 They will understand the reconstruction the of Japan and major trends that emerge in Asia.

CO3 Learners will comprehend about the political condition of Southeast Asia.

CO4 To Understood the conflicts in Southeast Asia.

Course (Paper) Name and No.: Research Methodology and Sources of History_UAR6HS9

CO1 Students will be understanding and aware of historical research.

CO2 The understand to students the importance of Local History in new trend of Historical Research.

CO3 Introduce students to various approaches in Historical research.

CO4 To Understand the elements of Historical Research through research.

Programme- M.A.

Programme Outcomes

PO1 To understand the relationship between literature and society and reflection of universal truths

PO2 To appreciate world classics in the realm of English Literature.

PO3 To understand various consequences of gender discrimination

PO4 Students will able to understand the basic concepts of economics and can enter in the variety competitive services.

PO5 Students will learn the application of statistics and Econometrics in Economics and able to estimate the performance of the Economy and various sectors

Department of English

Programme Specific Outcomes

PSO1 To appreciate world classics in the realm of English Literature.

PSO2 To empower the students with research aptitude and creative writing.

PSO3 To understand various consequences of gender discrimination.

PSO4 To enhance analytical and evaluative skills of the learners.

PSO5 To examine reflection of universal truths in the realm of literature.

Department of Economics

Programme Specific Outcomes

PSO1 Learners will able to understand the concepts of economics and can enter in the variety competitive services.

PSO2 Learners will learn the application of Mathematics and Statistics in economics and able to estimate the performance of the various sectors.

PSO3 Learners can appear for further research work in economics.

PSO4 Learners can appear for NET and SET.

PSO5 Learners can work as assistant professor at degree college.

PSO6 Students can start their own business in the market.

Department of Hindi

Programme Specific Outcomes

PSO1 Understanding the relation between society and literature and analyse the role played by Hindi literature in past and present.

PSO2 Understanding the strategy of converting worship into the movement of struggle for cultural freedom.

PSO3 Developing skill of writing official letters in functional Hindi.

PSO4 Developing philosophy of life inspiring by the vision of eminent writers.

PSO5 Gaining socio cultural consciousness.

Course Outcomes
Master of Arts

Semester I

A. Economics

Course (Paper) Name and No.: Micro Economics-I

CO1 Relate the utility with consumer behaviour.

CO2 Explain production, cost and supply function.

CO3 Make use of price and output determination under perfect competition.

CO4 Examine the monopoly and its aspects.

Course (Paper) Name and No.: Economics of Development

CO1 Demonstrate the role of social and economic indices of growth and development.

CO2 Judge various modern theories of growth and distribution.

CO3 Define various market concepts.

CO4 Examine the various aspects of Foreign trade.

Course (Paper) Name and No.: - Macro Economics

CO1 Relate economic mechanism with their regular life.

CO2 Illustrate the concept of national income.

CO3 Identify the mechanism of the open economy.

CO4 Assess the functions of the money and capital market.

Course (Paper) Name and No.: Statistical Methods in Economics

CO1 Define concept of Random variable and its types.

CO2 Explain concept of Hypothesis and different type's distributions and its applications.

CO3 Concept of simple linear regression and interpretation of regression coefficient.

CO4 List the problems in simple linear regression and its consequences.

B. English Literature

Course (Paper) Name and No.: Literary Theory and Criticism I _ PAR1LTC0

CO1 Interpret classical critical theories and itsreflection in literature

CO2 Apply Romantic critical theories and its relevancein literary texts

CO3 Examine nature and features of Indian classicaldrama

CO4 Develop techniques of New Criticism for betterappreciation of literature

Course (Paper) Name and No.: Linguistics and Stylistics Analysis of the Text_ PAR1LSA0

CO1 Classify figurative devices and linguistic patternsdemonstrated in language

CO2 Make use of lexis and syntax of language

CO3 Analyse the usage of cohesion and coherence inEnglish language

CO4 Elaborate stylistic and linguistic approach to thestudy of literature

Course (Paper) Name and No.: Fiction III _ PAR1FCT0

CO1 Interpret significant types of novels with suitableexamples

CO2 Identify satirical elements reflected in the noveland its corelation with socio-political condition

CO3 Analyze distinctiveness of Victorian novelist andtheir depiction of multiple themes

CO4 Perceive the causes of tragedy in literature as wellas in real life

Course (Paper) Name and No.: Drama IV _ PAR1DRM0

CO1 Demonstrate origin and development of dramaand its theatrical features

CO2 Identify tenets of Natyashastra and its reflection inSanskrit drama

CO3 Examine the need for emancipation of women andrevolt against patriarchy

CO4 Assess the reflection of human values in the dramaand its application

C. Hindi

Course (Paper) Name and No.: History of Hindi Literature(Adhunik kal), Paper-I

CO1 Understanding the basis of the classification of Hindi literature.

CO2 Understanding the concept of history of literature.

CO3 Understanding the features of Adikal, Bhakti kal, Ritikal and Adhunikkal, in context of socio - cultural and political condition of that period.

CO4 Understanding the literary trends of Adhunik kal

CO5 Understanding the reason of emergence of Adhunikkal in Hindi literature

Course (Paper) Name and No.:kavyasastra evam Sahityalochan, Paper-III

CO1 Understanding the criticisms of Indian poetry theory and their basis information.

CO2 Understanding the theory of national poetry.

CO3 Understanding the theory of international poetry.

CO4 Understanding the Indian theory of thinkers.

CO5 Understanding the Indian theory and criticisms of International thinkers.

Course (Paper) Name and No.: Bhasha Vigyan avam Hindi Bhasha, Paper-5

CO1 Learners will be able to understand and list down various aspects of Linguistics and Hindi language

CO2 To be able to understand nuances of Phonetics, Morphology, Syntax and semantics

CO3 To be able to trace and list down the entire journey of Hindi language period wise with unique aspects of all stages.

CO4 To be able to comprehend all aspects of Devanagrilipi including origin, evolution and unique features.

CO5 To be able to apply the knowledge of advanced level of grammar

Course (Paper) Name and No.: Ancient and Medieval Poetry, Paper-7

CO1 Describing the progressive nature of Sant Kabir and his writings.

CO2 Understanding the vision of Mira in context of her Krishna Bhakti poetry.

CO3 Describing the Krishna leela poetry of Soordas by relating it with his philosophy of his life

CO4 Understanding the vision of Malik Mohd Jaysi in context of poetry.

CO5 Describing the Rama Bhakti poetry of Tulsidas along with the philosophy of Bhakti cult.

CO6 Understanding bravery in context of Bhushan poetry.

Semester II

A. Economics

Course (Paper) Name and No.: Micro Economics

CO1 Outline the game theory in detail.

CO2 Create an understanding of strategic behaviour under oligopoly and monopoly market.

CO3 Simplify the information economics for their practical life.

CO4 Define various alternative theories of the firms.

Course (Paper) Name and No.: Macroeconomics-II

CO1 Examine the price setting mechanism in an economy.

CO2 Relate the importance of Neo-Classical economics.

CO3 Elaborate the Keynesian economics in detail.

CO4 Summarise Macroeconomic policies.

Course (Paper) Name and No.: Public Economics

CO1 Define mechanism of taxation in India.

CO2 Illustrate local, state and central government expenditure.

CO3 Evaluate tax regulation, distribution, implication and tax evasion.

CO4 Examine India's federal structure, Decentralization and Government reforms.

Course (Paper) Name and No.: Mathematical Techniques for Economists

CO1 Make use of concept of Set and different types of functions.

CO2 Examine concept of derivative and unconstrained optimization and its application in economics.

CO3 Interpret constrained optimization with equality and inequality constraints.

CO4 Adapt concept of matrices and its applications.

B. English Literature

Course (Paper) Name and No.: Literary Theory and Criticism_PAR2LTC0

CO1 Recognize the relationship between literature andliterary theories

CO2 Identify feministic ideology represented inliterature

CO3 Distinguish features of Reader Response Theoryand its application to literary works

CO4 Evaluate the formation of ecocriticism & itsessence in literature as well as in real life

Course (Paper) Name and No.: Linguistic and Stylistic Analysis of Text_ PAR2LSA0

CO1 Illustrate the sound system of English language

CO2 Identify place and manner of articulation of Vowelsand Consonants

CO3 Inspect salient traits in narratology and itsapplication

CO4 Explain the techniques of discourse analysis

Course (Paper) Name and No.: Fiction _ _PAR2FCT0

CO1 Illustrate modern and postmodern novels, its unique characterization and shifting fromtraditional themes

CO2 Identify the significant contribution of modern novelists and their focus on elements of psychology and imperialism

CO3 Distinguish the conflict between good and evil inliterary text and life

CO4 Adapt social, ethical values percolated in theliterary texts

Course (Paper) Name and No.: Drama _ _PAR2DRM0

CO1 Classify different types of drama and its distinctiveness in modern and postmodern era

CO2 Identify the relationship between nature and manpresent in literature and society

CO3 Compare antitraditional features of absurd dramaand its thematic concerns

CO4 Estimate various paradigms of relationship andproblems of working class depicted in the plays

C. Hindi

Course (Paper) Name and No.: History of Hindi Literature(Adhunik kal), Paper II

CO1 Understanding the basis of the classification of Hindi literature.

CO2 Understanding the concept of history of literature.

CO3 Understanding the features of Adikal, Bhakti kal, Ritikal and Adhunikkal, in context of socio - cultural and political condition of that period.

CO4 Understanding the literary trends of Adhunik kal

CO5 Understanding the reason of emergence of Adhunikkal in Hindi literature

Course (Paper) Name and No.:kavyasastra evam Sahityalochan, Paper IV

CO1 Understanding the criticisms of Indian poetry theory and their basis information.

CO2 Understanding the theory of national poetry.

CO3 Understanding the theory of international poetry.

CO4 Understanding the Indian theory of thinkers.

CO5 Understanding the Indian theory and criticisms of International thinkers.

Course (Paper) Name and No.: Bhasha Vigyan avam Hindi Bhasha, Paper- VI

CO1 Learners will be able to understand and list down various aspects of Linguistics and Hindi language

CO2 To be able to understand nuances of Phonetics, Morphology, Syntax and semantics

CO3 To be able to trace and list down the entire journey of Hindi language period wise with unique aspects of all stages.

CO4 To be able to comprehend all aspects of Devanagrilipi including origin, evolution and unique features.

CO5 To be able to apply the knowledge of advanced level of grammar

Course (Paper) Name and No.: Ancient and Medieval Poetry, Paper VIII

CO1 Describing the progressive nature of Sant Kabir and his writings.

CO2 Understanding the vision of Mira in context of her Krishna Bhakti poetry.

CO3 Describing the Krishna leela poetry of Soordas by relating it with his philosophy of his life

CO4 Understanding the vision of Malik Mohd Jaysi in context of poetry.

CO5 Describing the Rama Bhakti poetry of Tulsidas along with the philosophy of Bhakti cult.

CO6 Understanding bravery in context of Bhushan poetry.

Semester III

A. Economics

Course (Paper) Name and No.: Economics of Agricultural production and Rural Markets

CO1 Outline Economics of agricultural production and productivity in India.

CO2 Elaborate the Rural credit markets in India.

CO3 Define labour markets for economic development in India.

CO4 Identify Land and Lease market in detail.

Course (Paper) Name and No.: Economics of Labour Markets

CO1 Assess the nature of labour market.

CO2 Explain the demand and supply of labours.

CO3 Classify the various dimensions of wages in labour market.

CO4 Identify social upliftment of labours in India.

Course (Paper) Name and No.: Trade Unions and Industrial relations in India

CO1 Outline origin and roles of Trade Unions.

CO2 Discuss various approaches for the development of Industrial sector.

CO3 Evaluate responsibilities by workers in India.

CO4 Analyse the various laws related to industries and social development.

Course (Paper) Name and No.: Environmental Economics-IV

CO1 Outline role of environment in economic growth.

CO2 Explain different aspects related to environmental development.

CO3 Identify the issues related to environmental field.

CO4 Elaborate various environmental policies, agreements and case studies.

B. English Literature

Course (Paper) Name and No.: Poetry From Chaucer to Present_ PAR3PCP

CO1 Classify tenets of different schools of poetry inEnglish Literature

CO2 Identify attributes of Metaphysical school ofpoetry with illustrations

CO3 Examine the nature and features of Romantic andModern school of poetry

CO4 Measure the depiction of human values in poetryand its application in real life

Course (Paper) Name and No.: Gender Perspectives on Literature_PAR3GPL

CO1 Summarize prominent critical theories related togender with appropriate literary texts

CO2 Compare projection of men and women characters in the context of gender discrimination

CO3 Determine the status of women in patriarchal andsocietal system

CO4 Modify traditional prejudices and practice genderparity in the society

Course (Paper) Name and No.: Twentieth Century American Literature_PAR3TCA

CO1 Illustrate literary terms with suitable examples in the realm of twentieth century American Literature

CO2 Analyse identity crisis and philosophical veinsincorporated in American poetry

CO3 Perceive predicaments of the protagonist belonging to African American Literature

CO4 Develop the sense of multi- culturalism throughprominent texts of American Literature

Course (Paper) Name and No.: Shakespeare IV _ PAR3SHK

CO1 Interpret salient characteristics of Shakespearean tragedies with relevant illustrations

CO2 Identify nature and features of Romantic comediesas well as Historical plays of Bard of Avon

CO3 Evaluate prominent themes reflected in world famous works of William Shakespeare

CO4 Elaborate depiction of universal truths andrelevance of William Shakespeare in 21st Century

C. Hindi

Course (Paper) Name and No.: Modern Prose _ PAR3HN9

CO1 भारतीय कृषक के विसंगतिपूर्ण जीवन की अभिव्यंजना, सामाजिक शोषकों का यथार्थ चित्रण, समाजवादी व्यवस्था पर बल क्रांतिधर्मी नारी-चरित्रों की सृष्टि, आदर्श समाज की स्थापना का छात्र समीक्षात्मक अध्ययन कर सकेंगे।

CO2 'आधे-अधूरे' नाटक के अध्ययन से छात्र मध्यवर्गीय परिवार की विसंगतियों, स्त्री-पुरुष के संबंधों, अमानवीय परिस्थितियों और पारस्परिक मनान्तर को समझेंगे ।

CO3 आधुनिक मध्यवर्गीय परिवार की सामाजिक, मानसिक और आर्थिक स्थितियों की समीक्षा कर सकेंगे।

CO4 आशोक के फुल निबन्ध संग्रह के अध्ययन से छात्रों में भारतीय इतिहास, इतिहास और संस्कृति तथा ऐतिहासिक खोजों का आलोचनात्मक अध्ययन करने की दृष्टि प्राप्त कर सकेंगे।

Course (Paper) Name and No.: Modern Poetry _ PAR3HN11

CO1 जयशंकर प्रसाद के व्यक्तित्व एवं कृतित्व तथा कामायनी में चित्रित समरसता दर्शन को स्पष्ट कर सकेंगे

CO2 महाकाव्यत्व की कसौटी पर कामायनी का मूल्यांकन प्रस्तुत कर सकेंगे।

CO3 राम की शक्ति पूजा तथा निराला की सभी कविताएँ एक साथ पुराण, इतिहास, धर्म, संस्कृति, मिथक, स्वप्न, यथार्थ, परंपरा तथा आधुनिकता को किस तरह अपने में समेटे हुए हैं इसको भिन्न-भिन्न सन्दर्भों में विश्लेषित कर सकेंगे।

CO4 कविता के माध्यम से छात्र भ्रष्टाचार और अनैतिकता तथा स्वतन्त्रता पूर्व तथा स्वतन्त्रता के बाद की स्थितियों का तुलनात्मक अध्ययन कर सकेंगे।

Course (Paper) Name and No.: Special Study : Hindi Poetry of Marathi Saint _ PAR3HN13

CO1 मराठी संतों के हिंदी काव्य तथा मराठी संतों से छात्र परिचय प्राप्त कर सकेंगे।

CO2 मराठी संतों के काव्य के अध्ययन से छात्र महाराष्ट्र की संस्कृति तथा हिंदी भाषी क्षेत्रों की संस्कृति का तुलना कर सकेंगे।

CO3 संत तुकाराम, संत नामदेव के काव्य के अध्ययन से छात्र मानवतावादी संदेश से परिचित हो सकेंगे ।

CO4 छात्र महाराष्ट्र के संतों के व्यक्तित्व एवं कृतित्व के अध्ययन से हिंदी भाषी संतों के विचारों की समीक्षा कर सकेंगे।

Course (Paper) Name and No.: Prayojanmoolak Hindi _ PAR3HN15

CO1 Explain the context, characteristics and applications of Functional Hindi.

कार्यात्मक हिंदी के संदर्भ, विशेषताओं और अनुप्रयोगों की व्याख्या करना।

CO2 Make use of various forms of Functional Hindi like Creative language, Official Language, etc.

कार्यात्मक हिंदी के विभिन्न रूपों जैसे रचनात्मक भाषा, राजभाषा आदि का उपयोग करना।

CO3 Examine the many forms and process of translation to learn about the attributes that a translator must possess.

अनुवादक के गुणों के आधार पर उसके रूपों और प्रक्रियाओं का परीक्षण करना |

CO4 Explain the importance of advertisements in today's world with respect to its meaning, objective and types

वर्त्तमान युग में विज्ञापन के अर्थ, उद्देश्य और प्रकारों के संदर्भ में उनके महत्व की व्याख्या करना|

Semester IV

A. Economics

Course (Paper) Name and No.: Economics of Human Development

CO1 Illustrate various concepts related to human development.

CO2 Define multiple dimensions of human development.

CO3 Measure various aspects related to human development indices.

CO4 Identify different aspects of human development.

Course (Paper) Name and No.: Industrial Economics

CO1 Define market structure with the reference to the firms.

CO2 Explain overall development of industrial development with the help of technical know-how.

CO3 Examine the financial tools in industrial development.

CO4 Elaborate performance and growth of Indian Industrial sector.

Course (Paper) Name and No.: Agricultural Development and policy

CO1 Explain various theories of agricultural development.

CO2 Analyse various initiatives by public sector time to time for agricultural development.

CO3 Create awareness on contemporary debates in the area of agricultural products and market.

CO4 Explain trends about agricultural development and its implications.

Course (Paper) Name and No.: Research Project

CO1 Explain the basics of Research Methodology.

CO2 Compare the methods of data collection, analysis of data and presentation.

CO3 Decide the advance methods of analysis and Index

CO4 Compile the testing of hypothesis and report writing

B. English Literature

Course (Paper) Name and No.: Indian Writing in Translation I_ PAR4IWT

CO1 Interpret significant Indian texts in translation andits linkages between society and political upheavals

CO2 Identify reflection of Indian ethos and poetry

CO3 Distinguish the outstanding contribution of modern Indian dramatists and their unique representation of social realism

CO4 Elaborate the literary journey of Dalit women writers and their ways of empowerment and emancipation

Course (Paper) Name and No.: Research Methodology II_ PAR4RSM

CO1 Interpret essential key concepts for initiatingresearch in English language and Literature

CO2 Identify paradigms of primary, secondary data andplagiarism

CO3 Determine appropriate methods to be used forresearch in English language and Literature

CO4 Develop the research capabilities and acumen for pursuing research in English language andLiterature

Course (Paper) Name and No.: Political Reading of Literature III _ PAR4PRL

CO1 Demonstrate nature of monarchic ideologydepicted in literary works

CO2 Apply colonialism and imperialism as an ideology to literature with suitable examples

CO3 Examine the politics of race, class and gender inrepresented in English literature

CO4 Discuss the nature of politics in literature andreflection in reality

Course (Paper) Name and No.: Project Writing IV _ PAR4PWT

CO1 Apply basic tools of research in selected domainsof study

CO2 Examine Research Methodology used in languageand literature

CO3 Determine the scheme of chapterization in theresearch project

CO4 Create a dissertation pertaining to the researchtopic successfully

C. Hindi

Course (Paper) Name and No.: Modern Prose _ PAR4HN10

CO1 उपन्यास के अध्ययन से छात्र डॉ.बाबासाहेब आंबेडकर के व्यक्तित्य एवं कृतित्व को समझ सकेंगे।

CO2 नाटक विधा के अध्ययन से छात्र संपूर्ण विश्व के अंधत्व से पीड़ित व्यक्तियों की समस्याओं से परिचित हो सकेंगे।

CO3 छात्र उपन्यास तथा नाटक के तत्वों के माध्यम से उन विधाओं का समीक्षात्मक विवेचन कर सकेंगे।

CO4 कहानियों के अध्ययन से छात्र भारतीय संस्कृति, मानवीयता, जातीयता,एवं पारिवारिक जीवन परिचय प्राप्त कर सकेंगे।

CO1 उपन्यास के अध्ययन से छात्र डॉ.बाबासाहेब आंबेडकर के व्यक्तित्य एवं कृतित्व को समझ सकेंगे।

Course (Paper) Name and No.: Modern Poetry _ PAR4HN12

CO1 बौद्ध दर्शन, अंतः और बाह्य जगत् की एकाकारता, आत्मा और परमात्मा, व्यष्टि और समष्टि का तादात्म्य साहित्य, संगीत, कला, आस्वादन की प्रक्रिया को छात्र अपने आप में आत्मसात कर सकेंगे ।

CO2 धूमिल की कविताओं के अध्ययन से छात्र कविताओं से परिचित हो सकेंगे तथा कविताओं के मूल अर्थ को समझ सकेंगे।

CO3 कविताओं में उभरने वाली अर्थ व्यंजनाओं, भाषा और रचना-प्रक्रिया से परिचित हो सकेंगे।

CO4 दलित कविताओं के अध्ययन से छात्र भारतीय दलितों के जीवन की करूण व्यथा तथा भाग्य, ईश्वर, नियति के विरूद्ध उनके पीछे व्याप्त स्वार्थ एवं षड्यन्त्र से परिचित हो सकेंगे।

Course (Paper) Name and No.: Jansanchar Madhyam_PAR4HN14

CO1 Explain what the term "mass media" means, what it entails, and how it works.
स्पष्ट करना कि है अर्थ क्या का शब्द "मीडिया मास", इसमें क्या शामिल है, और यह कैसे काम करता है।

CO2 Identify the different characteristics of languages used by the media, such as film, radio and television language.

मीडिया द्वारा उपयोग की जाने वाली भाषाओं की विशेषताओं की पहचान करना, जैसे फिल्म, रेडियो और टेलीविजन की भाषा।

CO3 Evaluate that social media has a significant influence in the evolution of society
विश्लेषण करना कि समाज के विकास में सोशल मीडिया का महत्वपूर्ण प्रभाव है|

CO4 Discuss many types of media writing, such as news writing, feature writing, radio play writing, and so on.
कई प्रकार के मीडिया लेखन पर चर्चा करना, जैसे समाचार लेखन, फीचर लेखन, रेडियो नाटक लेखन, आदि।

Course (Paper) Name and No.: Project Writing _PAR4HN16

CO1 अनुसंधान की पद्धति तथा उसके तत्वों से परिचित होंगे।

CO2 अनुसंधान का अर्थ, परिभाषा एवं विशेषताओं समझ सकते हैं

CO3 शोध प्रविधि, शोध का महत्त्व, शोध के प्रमुख सोपान, शोध की प्रेरणा, शोध के उद्देश्य, शोध दृष्टिकोण, शोध-प्रक्रिया, शोध-प्रक्रिया के विविध चरण, विषय-निर्धारण आदि अनुसंधान की जानकारी प्राप्त कर अच्छा प्रबंध लिख सकेंगे।

CO4 शोध की रूपरेखा, सामग्री संकलन, शोध प्रबंध लेखन, सन्दर्भ ग्रंथ सूची की पद्धति, आदि अनुसंधान के अंगों से परिचित होकर समीक्षा कर सकेंगे।

Faculty of Commerce

Programme- B.Com

Programme Outcomes

PO1 After completing three years for Bachelors in Commerce (B.Com) programme, students would gain Knowledge in the fundamentals of Commerce, Accountancy, Management and all allied subjects

PO2 The commerce focused curriculum offers a number of specializations which would equip the student to face the modern-day challenges in commerce and business and they will be prepared to accept responsibilities in the business world

PO3 Empowerment of learners through access to commerce education and enabling them to develop as intellectually active, socially responsible citizens always ready for continuous personal and professional growth to fit into the challenging business environment

PO4 Inculcate the element of research amongst the learners, to develop their overall personality

Course Outcomes

Class: F.Y.B. Com.

Semester I

Course (Paper) Name and No.: Commerce I

CO1 Explain concept of Business , Objectives of Business and New Trends in Business.

CO2 List Constituents of Business Environment, Impact of WTO and Trading Blocs.

CO3 Discover Project Planning, Promotion of Business Unit and statutory Requirement in promoting Business Unit.

CO4 Develop Competencies of Entrepreneurship.

Course (Paper) Name and No: Accountancy and Financial Management - I

CO1 Define the accounting standards.

CO2 Solve LLP concern final account.

CO3 Solve departmental final account.

CO4 Compare Bank Balance and Cash Balance

Course (Paper) Name and No: Business Economics- Paper no. I

CO1 Learners understand the basic tools to analyze the business economics.

CO2 Learners are able to understand the elasticity of demand forecasting.

CO3 Learners studied the theories related to production function.

CO4 Learners are now in a position to understand different concepts of costs

Course (Paper) Name and No.: Paper No. I - Environmental Studies

CO1 Understand comprehensibly the concept of environment and ecosystem.

CO2 Understanding the natural resources and need and measures for sustainable development.

CO3 Understand the population and emerging issues of development

CO4 Understand the urbanization and environment.

CO5 Read the thematic maps and fill the world map.

Course (Paper) Name and No.: Business Communication I

CO1 To recognize importance of business communication in corporate world.

CO2 To differentiate between formal and informal communication.

CO3 To understand the use of technology in the process of communication.

CO4 To acquire the skills of drafting various business letters.

CO5 To understand the importance of presentation and interview skills.

Course (Paper) Name and No.: Mathematical & Statistical Techniques-I

CO1 Explain shares, mutual funds, permutation, combination and LPP

CO2 Apply Summarization Measures to solve the examples

CO3 Find the probability

CO4 Solve the problems by using decision theory criterions

Semester II

Course (Paper) Name and No.: Commerce II

CO1 Explain Concept of service, Marketing Mix for Services and service strategies.

CO2 Summarize Retailing, its format and Retail scenario.

Course (Paper) Name and No: Accountancy and Financial Management - II

CO1 Define the conversion method in incomplete records of accounting.

CO2 Find del-creder commission in consignment accounts.

CO3 Construct the Branch Profit or Loss

Course (Paper) Name and No: Business Economics- Paper no. II

CO1 Learners get the knowledge of perfect competition and monopoly markets

CO2 Learners are now able to discriminate monopolistic competition and oligopoly markets.

CO3 Learners studied the different pricing practices adopted by the firm.

CO4 Students studied the theories capital budgeting.

Course (Paper) Name and No.: Paper No. I - Environmental Studies

CO1 Understand the solid waste management and role of society in solid waste management.

CO2 Understanding the environmental problems associated with agriculture and sustainable agricultural practices.

CO3 Understand the Tourism potentials and challenges before India.

CO4 Understand the environmental movements and environmental management in India.

CO5 Able to fill the environmentally significant features in Mumbai and Konkan region map.

Course (Paper) Name and No.: Business Communication II

CO1 To recognize importance of business communication in corporate world.

CO2 To differentiate between formal and informal communication.

CO3 To understand the use of technology in the process of communication.

CO4 To acquire the skills of drafting various business letters.

Course (Paper) Name and No.: Mathematical & Statistical Techniques-II

CO1 Find the derivative, interest and annuity

CO2 Apply Bivariate Linear Correlation and Regression to solve the examples

CO3 Predict the future values by using time series methods and will able to find index numbers

CO4 Solve the problems of probability distribution

Class: S.Y.B. Com.

Semester III

Course (Paper) Name and No.: Accountancy and Financial Management – III

CO1 Find Purchase consideration in amalgamation of Firms.

CO2 Solve the partnership final A/c , with respect to admission, retirement and death from partnership firm

CO3 Inspect the accounting treatment for Piecemeal Distribution of Cash

CO4 Construct the hire purchase Table and journalized the transactions

Course (Paper) Name and No: Financial Accounting & Auditing – V Management Accounting

CO1 Analyze various ration like balance sheet ratio and Revenue statement ratio

CO2 Analyzing Interpret financial statement of company

CO3 Compose cash flow statement

CO4 Formulate Capital Budgeting

Course (Paper) Name and No: Business Economics- Paper no. III

CO1 Define the basic concepts of macroeconomics and national income

CO2 Explain the Keynesian theories related to macroeconomics.

CO3 Evaluate the different post of Keynesian developments in macroeconomics.

CO4 Examine the relationship between supply of money and demand for money for the estimation of inflation

Course (Paper) Name and No.: Advertising- I

CO1 Explain Integrated Marketing Communication, advertising & classification of advertising.

CO2	Analyse advertising agency, agency & client & career in advertising.
CO3	Identify economic & social aspects of advertising.
CO4	Know the Importance of Brand building, special purpose advertising & trends in advertising.

Course (Paper) Name and No.: Business law- I

CO1	Define the various aspects of Indian Contract act 1872.
CO2	Explain the concept of Special Contracts.
CO3	Analyse the sale of goods act 1930.
CO4	Explain the Negotiable Instrument act 2015 & Information Technology act 2000.

Course (Paper) Name and No.: Commerce Ill (Management Functions and Challenges)

CO1	Explain evolution of Management thought, and modern Management Approach.
CO2	Apply concept of planning, MBO, Decision making.
CO3	Analyse concept of organising, Departmentation and delegation of Authority.
CO4	Develop Leadership Traits, Motivation and Controlling Attitude.

Course (Paper) Name and No.: Computer Programming Paper- I

CO1	To give brief knowledge of computer hardware, software and system.
CO2	To understand all functionality of Word.
CO3	To use excel in different functions corresponding to different scenario.
CO4	To perform operations in excel as per the need

Semester IV

Course (Paper) Name and No.: Commerce IV

CO1 Illustrate Concept of Production Management, Production system and Inventory Management.

CO2 Infer Dimension of quality, Quality circle and Service Quality Management.

CO3 Analyse Functioning of Indian Financial Market, SEBI , Stock Exchange and Credit Rating Agencies.

CO4 Compare Recent Trends in Finance like Mutual Fund, Commodity Market, Derivative Market, Start up venture,Micro Finance and Managing Finance during Pandemic.

Course (Paper) Name and No.: Accountancy & Financial Management IV

CO1 Define the basic of issue, of shares and debentures

CO2 Summarized the concept of accounting software

CO3 Analyze the company income statement between pre and post period on the basis of incorporation

CO4 Determine the company laws conditions and relate to redemption of Preference Shares

Course (Paper) Name and No.: Financial Accounting and Auditing – Auditing

CO1 Explain concept of Auditing

CO2 Outline Audit plan, procedure and Documentation

CO3 Interpret audit techniques ,internal audit, internal control

CO4 Evaluate audit techniques like vouching & verification

Course (Paper) Name and No: Business Economics- Paper no. IV

CO1 Define the basic concepts of public finance.

CO2 Analyze the tax and non-tax revenues of the government.

CO3 Evaluate the theories of public expenditure and public debt of the government.

CO4 Modify the budget and other policies of the government.

Course (Paper) Name and No.: Advertising- II

CO1 Classify the various medias in advertising.

CO2 Explain advertising budget, advertising campaign & media planning.

CO3 Analyse the fundamentals of creativity, creativity aspects & creativity through endorsement.

CO4 Know the Importance of execution & evaluating of advertising.

Course (Paper) Name and No.: Business law-II

CO1 Explain the Indian Companies act 2013.

CO2 Summarize the Indian Partnership act 1932.

CO3 Determine the structure, objective & working procedure of consumer protection act 1986 & competition act 2000.

CO4 Evaluate the Intellectual property rights.

Course (Paper) Name and No.: Computer Programming- II

CO1 Students should be able to understand the concepts of programming before actually starting to write programs.

CO2 To acquire Object Oriented Skills in Python

CO3 Students should be able to develop logic for Problem Solving.

CO4 Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc.

Class: T.Y.B. Com.

Semester V

Course (Paper) Name and No.: Commerce V (Marketing)

CO1	Summarise the concepts of Marketing , Marketing research and Consumer behaviour,
CO2	Explain the various aspects and importance of marketing decision making
CO3	Analyze the Emerging trends in selling and Skill Sets required for Effective Selling
CO4	Examine the various key marketing dimensions and marketing during a pandemic

Course (Paper) Name and No.: Financial Accounting & Auditing – VII

CO1	Find the capital Reserve in internal Reconstruction
CO2	Build Investment Account of a particular person and ethical behavior and its implications for accountants.
CO3	Testing the applicability of Buy Back conditions
CO4	Categorize the assets and liabilities in vertical format.

Course (Paper) Name and No.: Financial Accounting and Auditing VIII (Cost Accounting)

CO1	Explain the concept of Cost Accounting, cost centre, Cost Unit, Elements of Cost, Coding System.
CO2	Apply the concept of Material cost, Stock Levels, Inventory control, EOQ and Stock Turnover Ratio.
CO3	Solve Practical Problems on Labour Cost and Overheads.
CO4	Construct Cost Sheet and Reconciliation of Cost and Financial Statement.

Course (Paper) Name and No.: Business Economics- Paper no. V

CO1 Recall the economic policies of the government of India.

CO2 Illustrate the agricultural policies of India.

CO3 Criticize the industrial and service sector policies of the government of India.

CO4 Examine the financial markets of India

Course (Paper) Name and No.: Marketing Research-I

CO1 Summarize the various introductory aspects of marketing research

CO2 Enable the student to plan marketing research

CO3 Analyze the various sources of data collection

CO4 Examine data processing, analysis and reporting

Course (Paper) Name and No: Export Marketing Paper –I

CO1 Summarize concepts of export marketing

CO2 Identify global framework of export marketing

CO3 Discover export incentives and assistance

CO4 Explain India's foreign trade policy

Course (Paper) Name and No: Direct & Indirect Tax I

CO1 Summarize the basic concept, of Income Tax and Residential Status

CO2 Apply Various deduction from Total Income

CO3 Assess the income from Salaries, house property, capital Gain and Business Income

CO4 Solve the Computation of Total Income for Individual and filling ITR-1 Form

Semester VI

Course (Paper) Name and No.: Commerce VI (Human Resource Management)

CO1 Explain the concepts of Human Resource Management

CO2 Summarize the various aspects of Human Resource Development

CO3 Examine the importance of Human relations

CO4 Analyze the various aspects of leadership, motivation, employee morale, employee grievance and their effective management in organizations

Course (Paper) Name and No.: Financial Accounting and Auditing Paper IX

CO1 Solve problems on foreign currency

CO2 Determine the net profit or Loss and Assets and Liabilities of Limited Liability Partnership Firm

CO3 Compose the table of Net liability in Underwriting of Shares and Debentures

CO4 Solve Purchase Consideration for amalgamation, absorption and external reconstruction

Course (Paper) Name and No.: Financial Accounting & Auditing X (Cost Accounting)

CO1 Apply the concept of Budgetary control for preparing Cash budget.

CO2 Solve Problems on Process Costing

CO3 Evaluate Concept of Contract Costing and Marginal Costing

CO4 Compare the Actual cost with Standard cost and able to do variance Analysis.

Course (Paper) Name and No.: Business Economics- Paper no. VI

CO1 Explain the theories of international trade.

CO2 Distinguish between various commercial policies adopted by various organizations in the world.

CO3 Evaluate the balance of payments and the agreements of WTO.

CO4 Illustrate the foreign exchange market.

Course (Paper) Name and No.: Marketing Research-II

CO1	Explain the various aspects of Product, brand and price research
CO2	Outline the various aspects of physical, promotion, advertising and consumer research
CO3	Analyze sales research, rural marketing research and global research
CO4	Determine how to manage marketing research activities and few prominent marketing research agencies

Course (Paper) Name and No: Export Marketing Paper –II

CO1	Outline export distribution channels and promotion techniques.
CO2	Apply product planning labeling and pricing decision for export marketing
CO3	Explain the procedures and role of various financial institutions for export finance.
CO4	Discuss export procedure and documentation.

Course (Paper) Name and No: Direct & Indirect Tax II

CO1	Find the taxable and non-taxable supplies
CO2	Outline the basic concept of Indirect Taxes (Goods and Service tax).
CO3	Understanding- Lower CO3 Determine the Time, Place and Value of Supply
CO4	Solve Input Tax Credit & Payment of Tax and Registration under GST Law

Department of Accounting and Finance

Program Specific Outcomes

PSO1 Understand the concept, development of experimental and analytical skills, developing the aptitude for academic and professional skills, acquiring basic concepts and understanding of hyphenated techniques, understanding the fundamental Accounting & Finance processes and rationale towards application of Accounting & Finance knowledge are among such important aspects.

PSO2 Acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in financial and business activities.

PSO3 Get platform to pursue professional courses such as Chartered Accountants, Cost and Management Accountant, MBA, etc.

PSO4 To do their higher education and can make research in the field of accountancy and Finance.

PSO5 To develop ICT skill and knowledge among learners in applications of internet in education leads to benefit in e-Governance.

PSO6 Update the knowledge about the business law, taxation law corporate law and industrial law.

Course Outcomes

Class: F.Y.B. Com. (Accounting and Finance)

Semester I

Course (Paper) Name and No.: Business Communication I

CO1 Demonstrate the outline theory of business communication.

CO2 Analyze formal and informal communication present and business organization.

CO3 Examine methods of communication and identify different barriers to successful communication.

CO4 Formulate various types of commercial letters effectively.

Course (Paper) Name and No.: Cost Accounting I

CO1 Describe the various concepts of cost, costing and cost accounting.

CO2 Calculate stock levels, economic order quantity and prepare stock ledger.

CO3 Evaluate different techniques of calculating employee cost and measurement of direct expenses.

CO4 Discuss the various concepts and methods of allocation, apportionment and absorption methods of overheads and calculate overhead rate.

Course (Paper) Name and No.: Commerce I

CO1 Describe the business and business environment.

CO2 Describe the business ethics and demonstrate the knowledge of MSMED.

CO3 Explain corporate social responsibility and social audit and various aspects of consumer protection law.

CO4 Evaluate different strategies for setting up the business at global level under an international business environment.

Course (Paper) Name and No.: Economics –I

CO1 Define the concepts related to business and its application.

CO2 Illustrate the fundamentals of demand and supply.

CO3 Make use of various production techniques to understand the functioning of productive units in the economy.

CO4 Compose various cost and pricing methods used in the market by the firms.

CO5 Interpret different types of market structure in the economy.

Course (Paper) Name and No.: Financial Accounting I

CO1 Describe The concept of receipt and expenditure and prepare the final account of manufacturing concern.

CO2 Discuss the Concept of Accounting Standards and Explain AS1 and AS2 and its applicability.

CO3 Demonstrate comprehensive knowledge of hire purchase system and compute interest and prepare the accounting entries

CO4 Classify the Income and expenses and calculate the various ratios and prepare the Departmental Final account.

Course (Paper) Name and No.: Financial Management I

CO1 Explain the various aspects of Financial Management and to describe types of finance

CO2 Explain how operating leverage contributes to a firm's business risk and apply financial leverage to form long term financial policies for business

CO3 Calculate time value of money

CO4 Define and measure the cost of capital and calculate WACC

Course (Paper) Name and No.: Foundation Course I

CO1 Summarize overview of Indian Society.

CO2 Identify various forms of Disparity in Society.

CO3 Explain Constitutional Values and Democratic Principles.

CO4 Discuss various aspects of Indian Political Process

Semester II

Course (Paper) Name and No.: Business Communication II

CO1 Identify different types of interviews organized in the commercial world.

CO2 Construct business letters effectively.

CO3 Analyze the mechanism of meetings, conferences and its application in the business world.

CO4 Develop effective presentation skills necessary in the corporate world.

Course (Paper) Name and No.: Innovative Financial Services

CO1 Describe the role and functions of financial services, factoring, forfaiting and bill discounting.

CO2 Explain the knowledge of various intermediaries such as merchant bankers, underwriters, stock brokers and securitization.

CO3 Explain consumer finance, credit ratings and types of plastic money and its growth.

CO4 Develop the knowledge of financial services such as lease and hire purchase, housing finance and venture capital and its mechanism.

Course (Paper) Name and No.: Business Mathematics

CO1 Demonstrate concept of shares and mutual funds.

CO2 Apply various formulas for simple and compound interest, EMI's, Functions and their applications.

CO3 Solve various problems of derivatives and apply optimization technique in economic.

CO4 Evaluate matrix operations and determinants of a matrix.

Course (Paper) Name and No.: Financial Accounting II

CO1 Discuss various aspects of fire insurance claim and compute amount of claim for loss of stock and profit

CO2 Discuss the various aspects of the consignment account and calculate commission's normal loss, Abnormal losses and prepare accounting for consignment account.

CO3 Classify the branches and prepare branch account under different method.

CO4 Prepare the final Account of Proprietary trading concern from incomplete records.

Course (Paper) Name and No.: Auditing-I

CO1 Define auditing and discuss principles of audit, types of audit errors and frauds and other concepts of auditing.

CO2 Describe audit planning, audit programme, audit working papers and audit note book.

CO3 Define internal audit, its objectives, scope, principles, and usefulness and distinguish between internal audit and statutory audit.

CO4 Explain and evaluate audit techniques.

Course (Paper) Name and No.: Business Law I

CO1 Define various components under Law of Contract, Sale of Goods Act, Negotiable Instrument Act and Consumer Protection Act.

CO2 Describe various components of Negotiable Instrument and its uses in Financial transactions.

CO3 Demonstrate the knowledge of Consumer Protection Council, Consumer Dispute Redressal Agencies.

CO4 Demonstrate the comprehensive knowledge of Indian Contract Act and draft legal agreement & MOU.

Course (Paper) Name and No.: Foundation Course II

CO1	Describe the concept of Globalization and its impact on Indian Society.
CO2	Classify various human rights and its journey of evolution.
CO3	Explain Concept of Stress, Conflicts and Managing Stress and Conflicts in Contemporary Society.
CO4	Discuss concepts of Ecology, Sustainable Development and different causes of Environment Degradation.

Class: S.Y.B. Com. (Accounting and Finance)
Semester III

Course (Paper) Name and No.: Foundation course III

CO1 Outline Indian Financial System

CO2 Summarize financial market system

CO3 Explain different types of financial instruments

CO4 Evaluate different financial services

Course (Paper) Name and No.: Auditing II

CO1 Describe the knowledge of auditing standards

CO2 Explain the various procedure of appointment of auditors

CO3 Apply verification techniques, vouching techniques for audit of assets and liabilities.

CO4 Examine income and expenditure.

Course (Paper) Name and No.: Principle and practice of banking

CO1 Describe the knowledge of Indian financial system

CO2 Demonstrate bank and related issues of bank

CO3 Make use of banking technology in payment system

CO4 Evaluate consumer behavior and product pricing in banking system

Course (Paper) Name and No.: IT in Accountancy I

CO1 Describe history and parts of computers and demonstrate the knowledge of hardware, software and networks.

CO2 Describe various emerging technologies in the world of technology.

CO3 Apply and demonstrate the knowledge of office productivity tools for drafting, data processing and presentation

CO4 Make use of E-commerce & M-commerce in personal and professional life & analyze the impact of e-commerce and m-commerce for developing business models & strategies.

Course (Paper) Name and No.: Financial Accounting III

CO1 Demonstrate the effects on financial statements in case of admission, retirement and death of a partner during the year.

CO2 Describe the concept of profit prior to incorporation and calculate the different ratios for determining the profit/loss for pre and post-incorporation period.

CO3 Calculate purchase consideration and evaluate the effect of amalgamation/conversion in the Balance Sheet.

CO4 Prepare and evaluate a statement of piecemeal distribution of cash under different methods.

Course (Paper) Name and No.: Taxation II

CO1 Define and describe concepts of income tax

CO2 Determine the residential status of different persons.

CO3 Identify and apply the assesse eligible for deduction for deduction under chapter VI A

CO4 Compute income chargeable to tax under the various heads of income

Course (Paper) Name and No.: Business Economics II

CO1 Understand the basic of national income accounting.

CO2 Understand the cause and consequence of business cycle.

CO3 Understand the role of fiscal and monetary policy.

CO4 Understand the Macro & Micro concepts of economics.

Course (Paper) Name and No.: Cost Accounting II

CO1 Describe process cost account and treatment of Normal loss, Abnormal loss and gain in the preparation of process cost accounting.

CO2 Identify total cost of join product and by product apply method of apportionment of join cost to join product and by product

CO3 Classify different types of cost and determine the total cost of the product.

CO4 Compute notional or estimates profit for contract

Course (Paper) Name and No.: Business Law-II

CO1 Describe various forms of IPR and provision of law with respect to registration of patent, copyright, trade mark.

CO2 Demonstrate the various provisions of limited liability partnership act 2008.

CO3 Acquaint knowledge of various acts of industries.

CO4 Design partnership deed as per partnership act 1932.

Course (Paper) Name and No.: Research Methodology in Accounting and Finance

CO1 Describe various aspects of research methodology

CO2 Demonstrate the research design in accounting and finance

CO3 Make use of various aspects of data collection and processing

CO4 Analyze various statistical tools for testing the hypothesis, Develop research report writing skill

Semester IV

Course (Paper) Name and No.: Information Technology in Accountancy- II

CO1	Describe IT and Business Process Management.
CO2	Demonstrate the knowledge of IT in auditing and information systems.
CO3	Make use of accounting software for recording the accounting transactions.
CO4	Prepare MIS Reports under Computerized Environment
CO5	Design the Computerized Accounting system.
CO6	Develop the knowledge of business Analytics. And financial Analytics.

Course (Paper) Name and No.: Financial Accounting IV

CO1	Describe various provisions of redemption of preference shares as per Companies Act, 2013.
CO2	Determines the underwriter's liability.
CO3	Calculate the maximum permissible limit of buyback of equity shares.
CO4	Determine different methods of redemption of debentures as per the provisions of the Companies Act, 2013.
CO5	Build the final accounts of companies

Course (Paper) Name and No.: Taxation III

CO1	Describe the various provisions of clubbing of income and set off and carry forward losses as per income tax act.
CO2	Compute taxable income of partnership firm
CO3	Demonstrate the knowledge of return of income and self-assessments
CO4	Examine and compute TDs and interest payable as per provision of income tax
CO5	Assess the file of income tax return for individual/HUF and partnership firms.
CO6	Estimate the advance tax liability of the assesse

Course (Paper) Name and No.: Business Law III

CO1 Define various concepts of the Companies Act, 2013.

CO2 Demonstrates the various provisions of the Insolvency and Bankruptcy Code, 2016.

CO3 Evaluate the various provisions of the Companies Act, 2013.

CO4 Elaborate the constitution of the National Company Law Tribunal.

Course (Paper) Name and No.: Auditing III

CO1 Describe various aspects of investigation and due diligences.

CO2 Demonstrate the knowledge of audit under computerized information system environment.

CO3 Make use of professional ethics while conducting the audit procedure.

CO4 Prepare audit report as per provision of company act 2013

Course (Paper) Name and No.: Business Economics II

CO1 Define the Keynesian concepts of National Income Theory of Income and Employment.

CO2 Interpret the relationship between supply of money and Demand for Money for the estimation of Inflation.

CO3 Identify the role of fiscal and monetary policies in understanding the economy.

CO4 Analyze the impact of international trade on the domestic economy.

Course (Paper) Name and No.: Wealth management

CO1 Define and explain the various aspects of wealth management.

CO2 Describe operational aspects of the wealth management

CO3 Calculate interest, DCIF and compare valuation of shares and bonds.

CO4 Analyses wealth management process

CO5 Develop wealth management plan

Course (Paper) Name and No.: Management Accounting

CO1	After completing the Programme in B. Com. Accounting and Finance, Student will able to:
CO2	Describe the comprehensive knowledge of management accounting
CO3	Prepare cash budget and cash flow statement
CO4	Analyze and interpret the financial statements by using different accounting techniques

Course (Paper) Name and No.: Foundation Course IV

CO1	Describe basic management concepts
CO2	Apply the concept of planning and organizing
CO3	Classify the procedure of staffing
CO4	Elaborate importance and principles of directing, motivation, coordination, and controlling

Class: T.Y.B. Com. (Accounting and Finance)

Semester V

Course (Paper) Name and No.: Taxation - III

CO1 Describe various provisions relating to utilization of Input Tax Credit.

CO2 Explain the concept of GST and discuss the framework of GST.

CO3 Explain and Compute the provisions relating to place of supply, Time and Value of

CO4 supply Determined Person liable for Registration and compute the GST liability of a registered person.

Course (Paper) Name and No.: Financial Management II

CO1 Describe the financial concepts used in strategic financial management

CO2 Explain the various capital structure theories and to demonstrate the dividend decision models

CO3 Apply the different techniques of capital budgeting for effective decision making

CO4 Calculate NAV with respect to mutual funds and ascertain the valuation of bond

CO5 Compare and evaluate different policies under receivable and payable management

Course (Paper) Name and No.: International Finance

CO1 Explain future and option of derivatives and calculate various components of derivatives options and futures.

CO2 Determination foreign exchange market and dealing in forging exchange market.

CO3 Determine exchange rate and to make comparison of different currencies.

CO4 Summaries various component of International financial management and evaluate the project by Applying various capital budgeting techniques.

Course (Paper) Name and No.: Cost Accounting III

CO1 Describe the uniform costing and inter-firm comparison.

CO2 Explain cost accounting system and prepare reconciliation statement.

CO3 Determine the cost and cost of service sector industry.

CO4 Calculate cost per equivalent unit by applying FIFO and Weighted average method and preparation of process cost accounting.

CO5 Determine and analyze the total cost under traditional and ABC system

Course (Paper) Name and No.: Financial Accounting V

CO1 Describe the block chain accounting.

CO2 Summarize the accounting entries based on GST.

CO3 Prepare the statement of affairs and liquidators final statement and consolidated financial statement.

CO4 Calculate purchase consideration and evaluate the effect of amalgamation/conversion in the Balance Sheet.

CO5 Discuss various methods and legal provisions of internal reconstruction.

Course (Paper) Name and No.: Financial Analysis and Business Valuation

CO1 Describe different techniques of financial modelling and project appraisal.

CO2 Demonstrate the various aspects and models of the valuation of the business.

CO3 Analyze the financial statements

CO4 Determine the value of assets and liabilities

Course (Paper) Name and No.: Financial Accounting VI

CO1 Describes the legal provision and prepare financial statement of a banking company and the insurance company.

CO2 Demonstrate the comprehensive knowledge of regulation governing non-banking

financial companies and preparation of the financial statement.

CO3 Calculate the goodwill and value per share by applying different methods.

CO4 Discuss the statutory provisions of conversion of partnership business into Limited liability partnership and preparation of the final accounts.

Course (Paper) Name and No.: Management II

CO1 Describe the various avenues of the marketing management.

CO2 Demonstrate comprehensive knowledge of human resource management and application of various related theories.

CO3 Explain the different aspects of production management.

CO4 Discuss and analyze various techniques of financial management.

Semester VI

Course (Paper) Name and No.: Taxation - IV

CO1 Describe various kinds of ledgers/Registers to be maintained by the taxable person.

CO2 Describe the basic concepts relating to export promotion schemes under FTP

CO3 Compute the payment of Taxes and Refunds and Explain the procedure of accounting, Auditing & assessments.

CO4 Analyze the provisions relating to TDS & TCS.

CO5 Discuss the provisions relating to Custom Laws and determine the procedure for clearance of imported and exported goods.

Course (Paper) Name and No.: Financial Management III

CO1 Describe various concepts in valuation and to make use of different approaches of valuation

CO2 Explain the modes of acquiring another firm and to determine the exchange ratio for evaluation of mergers

CO3 Explain the various aspects of corporate restructuring and takeovers and prepare balance sheet after reconstruction

CO4 Apply the knowledge of lease and hire purchase financing and analyze the NPV under lease and purchase

CO5 Evaluate working capital management policies and the risk

Course (Paper) Name and No.: Security Analysis and Portfolio Management

CO1 Summarize the Concept of Portfolio management and its process.

CO2 Describe theory of Valuation and Calculate Alternative method of Valuation

CO3 Evaluate Dow theory and Calculate Mathematical Indicators and Market Indicators.

CO4 Discuss and Calculate Economy Analysis, Industry Analysis and Company Analysis.

CO5 Summarize the Concept of Portfolio management and its process.

Course (Paper) Name and No.: Financial Accounting VII

CO1 Describe the legal provisions and prepare the final accounts of electricity companies and co-operative societies.

CO2 Demonstrate the knowledge of IFRS and Indian standards

CO3 Classify fixed and variable income bearing securities and calculate ex-interest and cum-interest price and weightage average cost.

CO4 Analyze accounting policies for maintain accounting of foreign branches.

CO5 Discuss the various mutual fund schemes, calculate NAV and prepare the accounting entries.

Course (Paper) Name and No.: Management Control Systems

CO1 Describe the various development in management accounting and management control systems.

CO2 Analyze the various statements of financial goals set.

CO3 Measure the performance under responsibility centers.

CO4 Discusses methods of inflation accounting.

Course (Paper) Name and No.: Indian Economy

CO1 Define the concepts of Indian Economy and Agricultural Sector.

CO2 Illustrate the service sector and industrial sector of India.

CO3 Examine money and banking sectors in India.

CO4 Evaluate Industrial sector and industrial policy of India

Course (Paper) Name and No.: Cost Accounting IV

CO1 Describe various types of budget and prepare flexible and personal budget

CO2 Discuss the absorption costing and marginal costing and calculate marginal cost of the product

CO3 Explain different policies under transfer pricing and calculate transfer price

CO4 Calculate and analyze the variances under the standard costing system.

CO5 Evaluate various schemes for managerial decision making

Course (Paper) Name and No.: Project Work

CO1	Explain the various aspects of writing research methodology based on project
CO2	Apply various statistical and accounting techniques for testing the hypothesis
CO3	Analyze and interpret the data
CO4	Develop research project writing skills and draft research project

Department of Management Studies

Programme Specific Outcomes

PSO1 Will create operational cadre management personnel

PSO2 Develop the lateral thinking, communication skills and social responsibilities among learners

PSO3 Strengthen the analytical, interpersonal organization and decision making skills through presentations and seminars.

PSO4 Adequate exposure to operational environment in the field of management

PSO5 Encourage and inculcate the use of modern technology to solve the practical problems in the real world

PSO6 Will prepare learners for future career success by encouraging them to develop necessary tools and skills, including written and oral communication skills, an ability to work with others, leadership qualities, and a capability to creatively solve problems

Course Outcomes

Class: F.Y.B.M.S.

Semester I

Course (Paper) Name and No.: Introduction to Financial Accounts UMS1IFA

CO1 Demonstrate basic knowledge of concepts, theories, principles and standards used in financial accounting.

CO2 Apply accounting concepts for transaction recording

CO3 Develop ability to prepare financial statement of the company

CO4 Interpret information in the financial statement of the organisation

CO5 Demonstrate basic knowledge of concepts, theories, principles and standards used in financial accounting.

Course (Paper) Name and No.: Business law UMS1BLW

CO1 Apply basic legal knowledge to business transactions in their future and identify the fundamental legal principles behind contractual agreements.

CO2 Classify the negotiable instrument and legal environment of the business.

CO3 Determine the legal and fiscal structure of different forms of business organisations and their responsibility as an employer.

CO4 Interpret the various provisions related to Intellectual Property Rights, its applicability, duration and registration procedures.

Course (Paper) Name and No.: Business Statistics UMS1BST

CO1 Explain fundamentals of statistics and different types of data

CO2 Analyse information using numerical data and graphical charts

CO3 Interpret statistical analysis tools to make business decisions

CO4 Evaluate performance of the business or company and identify trends

Course (Paper) Name and No.: Business Communication I UMS1BC1

CO1 Demonstrate the outline of theory of Business Communication

CO2 Analyze formal and informal communication present in business organizations

CO3 Examine methods of communication and identify different barriers to successful communication

CO4 Formulate various types of commercial letters effectively

Course (Paper) Name and No.: Foundation of Human skills UMS1FHS

CO1 Develop and nurture a deep understanding of personal motivation.

CO2 evaluate and improve upon personal leadership strengths and weaknesses

CO3 explain the importance of social responsibility & social ethics

CO4 Elaborate, lead and also guided by the values of self-awareness, equity, social justice, inclusiveness, empowerment, collaboration, citizenship.

Course (Paper) Name and No.: Business Economics – I UMS1BE1

CO1 Define the concepts related to business and its applications.

CO2 Illustrate the fundamentals of demand and supply.

CO3 Make use of various production techniques to understand the functioning of productive units in the economy.

CO4 Interpret different types of market structures in the economy.

CO5 Compare various cost and pricing methods used in the market by the firms.

Course (Paper) Name and No.: Foundation Course I UMS1FC1

CO1 Summarize overview of Indian Society.

CO2 Identify various forms of Disparity in Society

CO3 Explain Constitutional Values and Democratic Principles.

CO4 Discuss various aspects of Indian Political Process.

Semester II

Course (Paper) Name and No.: Principles of Marketing UMS2PMK

CO1 Define the concept of marketing and introduction of basic parts

CO2 Illustrate the marketing environment consisting of micro and macro also consumer behavior

CO3 Explain marketing mix in details

CO4 Discuss concept of Segmentation, Targeting and positioning also new trends in marketing

Course (Paper) Name and No.: Industrial Law UMS2ILW

CO1 Summarize the concept of Industrial relations and industrial disputes and will be able to illustrate the role of trade union in the industrial setup.

CO2 Explain the law related to health, safety and welfare measures in industry and provisions related to employee's compensation.

CO3 Distinguish various provisions in the industry for the employee benefits.

CO4 Identify numerous laws related to compensation and make use of it at the workplace.

Course (Paper) Name and No.: Business Mathematics UMS1BMA

CO1 Explain basic mathematical concepts

CO2 Make use of basics of mathematics for financial calculations like simple interest, compound interest, annuity, depreciation, etc

CO3 concepts of mathematical and economical functions

CO4 Predict risk and take decisions accordingly

Course (Paper) Name and No.: Business Communication II UMS2BC2

CO1 Identify different types of interviews organized in commercial world

CO2 Analyze mechanism of meetings, conferences and its applications in business world

CO3 Construct business letters effectively

CO4 Develop effective presentation skills necessary in corporate world

Course (Paper) Name and No.: Business Environment UMS2BEN

CO1 Interpret the nature of the business environment and its components.

CO2 Define the concept of Capitalism, Socialism and mixed Economy and recall the political and legal environment.

CO3 Discuss Corporate Social Responsibility, Corporate Governance, Social Audit, Corporate Culture and Ethical Climate.

CO4 Perceive the concept of growing economies through GATT, WTO, MNCs and FDI.

Course (Paper) Name and No.: Foundation Course in Physical Education II UMS2PE2

CO1 Organize college gym and practice exercise to develop fitness.

CO2 Illustrate the knowledge of principles of asthang yoga in real life

CO3 Identify the problems of obesity and try to manage it.

CO4 Judge the skills, techniques and Tactics of Volleyball, Handball and Football.

Course (Paper) Name and No.: Principles of Management UMS2PMG

CO1 Explain the functions and responsibilities of managers & tools and techniques to be used in the performance of the managerial job.

CO2 Analyze and understand the environment of the organization

CO3 Build the leadership capacity and teamwork skills for business decision making.

CO4 Elaborate the knowledge of current theory and techniques of major business discipline.

Course (Paper) Name and No.: Foundation Course II UMS2FC2

CO1 Describe the concept of Globalization & its impact on Indian Society

CO2 Classify various human rights & its journey of evolution.

CO3 Discuss concepts of Ecology, Sustainable Development & different causes of Environmental Degradation

CO4 Explain Concept of Stress, Conflicts, and Managing Stress and Conflicts in Contemporary Society.

Class: S.Y.B.M.S.

Semester III

Course (Paper) Name and No.: Basics of Financial Services

CO1	Explain financial markets and its various segments
CO2	Classify different financial institutions and their functions
CO3	Explain the fundamentals of banking and knowledge of banking operations.
CO4	Evaluate different instruments for investment in the financial market.

Course (Paper) Name and No.: Corporate Finance

CO1	Explain different sources of finance
CO2	Utilize tools and techniques for proper business decision making
CO3	Analyse various investment options based on time value of money.
CO4	Evaluate feasibility of the business

Course (Paper) Name and No.: Consumer Behaviour

CO1	Outline the consumer decision making process and its application in marketing function of firms.
CO2	Build the skill of analysing consumer information to create consumer-oriented marketing strategies.
CO3	Analyse the environmental and individual influence on consumers.
CO4	Utilise different Consumer decision-making models in business processes.

Course (Paper) Name and No.: Advertising

CO1	Illustrate the evolution of advertising, its different types and the ethics and laws used in advertising.
CO2	Develop Advertising strategy and apply the same in the marketing mix.

CO3 Design a creative advertisement campaign by making use of the different elements of advertising.

CO4 Examine the growing importance of advertising and career opportunities in advertising.

Course (Paper) Name and No.: Recruitment & Selection

CO1 summarize the process of recruitment & selection & various traditional & modern techniques of recruitment.

CO2 create a job profile by defining accountabilities, standards and competencies.

CO3 describe the skills and knowledge needed to conduct full and fair recruitment and selection.

CO4 conclude the importance of recruitment & selection, manpower planning, preparation of job description & job analysis & soft skills required for job.

Course (Paper) Name and No.: Motivation and Leadership

CO1 Define the concept of motivation and theories of motivation

CO2 Illustrate the Indian scene & work life balance

CO3 Explain Leadership & theories of leadership & types of leader

CO4 Elaborate great leader & their style , activities also roles of great leader

Course (Paper) Name and No.: Information Technology in Business Management-I

CO1 Demonstrate knowledge of security threats to computer systems and perform counter measures to secure it.

CO2 Analyze the role played by six major types of information systems in organizations and their relationships to each other.

CO3 Define the concept and application of E-mail, Internet and Domain Name System.

CO4 Develop and exhibit proficiency in the use of Word processing, spreadsheet and presentation applications and google forms.

Course (Paper) Name and No.: Foundation Course in Physical Education II

CO1 Explain the principles of nutrition, dietary guidelines and also implement the same for the purpose of improvements.

CO2 Utilizes the knowledge of health to improve physical fitness and apply the parameters to check the health status.

CO3 Make use of knowledge to prevent sports injuries

CO4 Analyse the the importance of sports training without using drugs for performance

Course (Paper) Name and No.: Foundation Course(Environmental Management)III

CO1 Define the concepts about environment, biogeochemical cycles and various types of resources available.

CO2 Classify various types of environment degradation, pollution, and recollect the concept of waste management.

CO3 Formulate solutions to the various environmental problems and challenges faced by us as per the legal and regulatory policies with regards to environment protection.

CO4 Explain methods and approaches for sustainable environmental planning, development and management.

Course (Paper) Name and No.: Business Planning & Entrepreneurial Management

CO1 Explain foundation of Entrepreneurship development & theories of entrepreneurship

CO2 Identify various types & classification of entrepreneurs

CO3 Explain Entrepreneur project development & Business plan

CO4 Discuss Venture development & its importance

Course (Paper) Name and No.: Accounting for Managerial Decisions

CO1 Evaluate and interpret financial statements by using trend %, common size and

comparative.

CO2 Define financial ratios and it's utility in Decision making for organization

CO3 Interpret cash inflows and cash outflows of the business from operating, investing and financial activities

CO4 Examine financial statements with the help of tools and techniques for accounting managerial decisions.

Course (Paper) Name and No.: Strategic Management

CO1 Define business policy and strategies and how does it affect the working of any business organizations.

CO2 Interpret the impact of internal and external environment on strategies of an organization.

CO3 Evaluate various corporate, business and functional level strategies. Also Explain various innovative and creative strategy making models.

CO4 Examine techniques, tools, models and theories of strategic management into practical business world.

Semester IV

Course (Paper) Name and No.: Strategic Cost Management

CO1 Classify main elements of cost

CO2 Estimates the cost incurred for making the product and preparation of cost sheet.

CO3 Make use of tools and techniques to ascertain the cost.

CO4 Determines the value of input units and finished goods under process costing

Course (Paper) Name and No.: Corporate Restructuring

CO1 Tell about formulation and implementation of corporate restructuring.

CO2 Develop understanding of causes, methods and types of restructuring

CO3 Build financial statements of internal & external reconstruction of an organisation.

CO4 Explain pre & post impact of reconstruction.

Course (Paper) Name and No.: Integrated Marketing Communication

CO1 Explain the basic principles of planning and execution in marketing communications.

CO2 Designing an effective advertising and develop sales promotion program.

CO3 Make use of managerial perspective and an informed decision-making ability for Effective and efficient tackling of promotional situations.

CO4 Interpret various range of tools available for marketing communication, and the various facets of advertising, public relation and promotion management.

Course (Paper) Name and No.: Rural Marketing

CO1 Outline the efforts put by the government in rural development and the problems in rural market and the ways to overcome it.

CO2 Identify the nature of competition in rural markets and the use of marketing mix by manufacturers.

CO3 Analyse the various distribution and communication strategies used in rural markets.

CO4 Develop the rural aspects of marketing and consumer behaviour and the abilities to design effective strategies.

Course (Paper) Name and No.: Training & Development in HRM

CO1 Explain the process, importance of training & development & also can interpret advantages of training & development & will also understand how to undertake training needs analysis.

CO2 Evaluate the process of management development.

CO3 Describe the counseling techniques with reference to the development of employees, society & Organization.

CO4 Interpret the process of performance management, appraisals & ethics of appraisal.

Course (Paper) Name and No.: Change Management

CO1 Define Change and its features, importance, levels & types

CO2 Identify the impact of Change & its implementation

CO3 Explain the resistance to change also how to overcome it & the concept of Organizational development

CO4 Discuss the effects of implementation of change

Course (Paper) Name and No.: Information Technology in Business Management

CO1 Infer the basic concepts, scope and application of data warehouse and data mining and big data.

CO2 Identify all components in an ERP system and the relationship among the components.

CO3 Assess various roles MIS have towards strategic goals and operational success of an organization.

CO4 Relate to the relationship between business information needs and decision making with respect to outsourcing

Course (Paper) Name and No.: Foundation Course (Ethics & Governance) - IV

CO1 Define the basic concepts of ethics and Business Ethics.

CO2 Analyze scope of ethics in Compliance, finance, financial market, Human resources, marketing, production.

CO3 Evaluate the theory of corporate governance used by organizations in the day-to-day working.

CO4 Outline the development of Corporate Social Responsibility and the responsibilities of business corporations beyond profit maximization.

Course (Paper) Name and No.: Business Economics-II

CO1 Define the Keynesian concepts of national income, theory of income and employment.

CO2 Interpret the relationship between the supply of money and demand for money for the estimation of inflation.

CO3 Identify the role of fiscal and monetary policies in understanding the economy.

CO4 Analyze the impact of international trade on the domestic economy.

Course (Paper) Name and No.: Business Research Methods

CO1 Define the concept and process of business research in a business environment.

CO2 Plan the use of tools and techniques for exploratory, conclusive and causal research.

CO3 Test the hypothesis using statistical techniques

CO4 Build the analytical abilities and research skills.

Course (Paper) Name and No.: Production & Total Quality Management

CO1 Summarize basics of productivity and total quality management.

CO2 Identify various designing aspects of production systems in different Industries.

CO3 Interpret various certifications and strategies for quality improvement.

CO4 Examine Inventory control techniques and materials management System.

Course (Paper) Name and No.: Foundation Course in Physical Education IV

CO1	Choose the ways and means to avoid stressful situations.
CO2	Build the mindset through the knowledge of rules and scheme of awards of sports
CO3	Apply the yogic exercises to improve performance and concentration in their personal game and work
CO4	How to apply good strategies for healthy life style

Class: T.Y.B.M.S.

Semester V

Course (Paper) Name and No.: Investment Analysis & Portfolio Management

CO1 Identify various short term and long term investment avenues.

CO2 Analyse different concepts of risk and return associated with various investment options.

CO3 Evaluate various investment portfolio using tools & techniques

CO4 Make use of tools and techniques to understand risk - return relationship

Course (Paper) Name and No.: Commodity & Derivatives Market

CO1 Define the meaning of financial derivatives.

CO2 Distinguish between forward futures and options contracts

CO3 Interpret the concept of Derivatives and its types

CO4 Identify about Hedging and the development position of Derivatives in India

Course (Paper) Name and No.: Wealth Management

CO1 Summarize various wealth management aspects through personnel investment planning, retirement planning, etc.

CO2 Assess investment opportunities by implementing wealth management strategies

CO3 Design, manage and evaluate alternative investment portfolios

CO4 Measure performance of portfolios by applying techniques

Course (Paper) Name and No.: Direct Taxes

CO1 Demonstrate the knowledge of concepts, principles and terminologies of income tax law

CO2 Interpret provisions of income tax laws

CO3 Assess computation of taxable income and tax liability

CO4 Develop the understanding of return filing

Course (Paper) Name and No.: Services Marketing

CO1 Define basic concept of service marketing and how does it differs from product marketing.

CO2 Analyse the impact of service recovery efforts on consumer loyalty and key elements of service marketing mix.

CO3 Identify quality aspects and importance of ethics in service marketing.

CO4 Interpret recent trends in marketing of services in various service sectors.

Course (Paper) Name and No.: E-Commerce & Digital Marketing

CO1 Define E-Commerce, its significance, innovative uses of E-Commerce, trends in e-commerce in various sectors and M-Commerce & its trends.

CO2 Application of E-commerce in developing competitive advantage for business and Build a website.

CO3 Interpret the importance of security, privacy, ethical issues and avenues related to E-Commerce.

CO4 Perceive the building blocks that constitute digital marketing and the tools, techniques, knowledge to develop cohesive digital marketing strategies.

Course (Paper) Name and No.: Sales & Distribution Management

CO1 Define knowledge about different components of sales and distribution management and what are the roles and responsibilities of a sales manager.

CO2 Interpret market analysis, sales forecasting approaches and selling concepts to focus on decision making aspects and implementation of decisions in sales and distribution management.

CO3 Design and Implement Distribution Channel Strategy.

CO4 Evaluate sales performance by using different performance evaluation techniques also perceive ethics and trends in sales and distribution management.

Course (Paper) Name and No.: Customer Relationship Management

CO1 Explain CRM goals and identify milestones in relationship management.

CO2 Analyze the companies which focuses on relationships with customers by using techniques of marketing initiatives, customer service and data management.

CO3 List the shift from short term customer transactions to a long-term relationship model.

CO4 Formulate best CRM strategies and practices.

Course (Paper) Name and No.: Finance for HR Professionals & Compensation Management

CO1 Describe the basic compensation concepts and the context of compensation practice.

CO2 Identify the internal and external environmental factors that have an impact on the pay structure of an organization

CO3 Illustrate different ways to strengthen the pay-for-performance link.

CO4 Design a pay structure or salary structure for employees working in the Company.

Course (Paper) Name and No.: Strategic Human Resource Management & HR Policies

CO1 Explain Human Resource Management with a strategic perspective.

CO2 Summarize HRM function and relate with corporate strategy in order to understand HR as strategic resource.

CO3 Assess strategic human resource Management and it's correlation with organizational performance

CO4 Apply theories and concepts relevant to strategic human resource management and utilize it for contemporary organization.

Course (Paper) Name and No.: Performance Management & Career Planning

CO1 Define the different facets of performance management of an enterprise.

CO2 Explain the features, components and evolution of performance management and its best practices.

CO3 Apply the performance management process like performance planning, benchmarking, managing and performance appraisal.

CO4 Determine the benefits and limitations of career planning and accordingly plan their career.

Course (Paper) Name and No.: Industrial Relations

CO1 Explain the concept of industrial relation.

CO2 Evaluate the essential concept of industrial relation at organization level and assess industrial dispute and various methods to prevent it.

CO3 Analyze how trade union are helpful in effective communication between workers and management through collaborative bargaining

CO4 Define history & provision of various legislation related to industrial relation in India

Course (Paper) Name and No.: Logistics & Supply Chain Management

CO1 Explain various technical concepts used in logistics and supply chain management.

CO2 How various warehousing management systems and transportation can be practiced in various industries?

CO3 To apply various techniques of inventory management and their practical situations.

CO4 Discover recent trends in logistics and supply chain management.

Course (Paper) Name and No.: Corporate Communication & Public Relations

CO1 Explain various technical concepts used in logistics and supply chain management.

CO2 How various warehousing management systems and transportation can be practiced in various industries?

CO3 To apply various techniques of inventory management and their practical situations.

CO4 Discover recent trends in logistics and supply chain management.

Semester VI

Course (Paper) Name and No.: Innovative Financial Services

CO1 Explain traditional as well as modern financial services based on fee based and fund based services.

CO2 Select the various intermediaries between the industry and the investors and explain the process of securitization.

CO3 Classify the facility available in the financial market regarding leasing, hire purchase, housing finance etc.

CO4 Summarize the financial products available in the market related to consumer durable & plastic money

Course (Paper) Name and No.: Project Management

CO1 Apply project management practices to the launch of new programs, products and services

CO2 Provide outline of planning and controlling activities to effectively produce and deliver goods and services.

CO3 Analyze appropriate business strategies and practices.

CO4 Evaluate knowledge about capital budgeting, capital structure and asset valuation.

Course (Paper) Name and No.: Strategic Financial Management

CO1 Illustrate basic concepts of financial management with regards to dividend policy and advanced capital budgeting

CO2 Examine theories and techniques to make better decisions

CO3 Demonstrate the knowledge and skills in relation to investment, financing and dividend policy decisions

CO4 Discuss corporate governance and financial management in banking sector

Course (Paper) Name and No.: Indirect Taxes

CO1 Demonstrate the basic knowledge of definitions and concepts GST law

CO2 Examine implication of provision GST law

CO3 Summarize the procedures involved from registration till return filing

CO4 Assess computation of tax liability

Course (Paper) Name and No.: Brand Management

CO1 Define meaning and significance of brand management, and how to build, sustain and grow brands.

CO2 Choose and implement various brand management programmes.

CO3 Assess various sources of brand equity.

CO4 Design Brand by using various Brand Elements.

Course (Paper) Name and No.: Retail Management

CO1 Interpret Organised Retail Sector and comprehend the ways retailers use technology to support the retail business.

CO2 Make use of various retail strategies related to the retail sector to achieve competitive advantage.

CO3 Appraise Merchandise Management and decide on the pricing of the products to attract the customers.

CO4 Develop a retail outlet.

CO5 Learners will be able to understand retail management terminology

Course (Paper) Name and No.: International Marketing

CO1 Outline strategies for entering into the international market.

CO2 Analyze environmental variables that influence international marketing and conduct research to enter a new international market.

CO3 Make use of strategies and tactics that can lead to successful international marketing.

CO4 Formulate a comprehensive International Marketing Plan.

Course (Paper) Name and No.: Media Planning & Management

CO1 Explain different features, impact and role of media in marketing.

CO2 Identify different budgeting techniques used, buying processes and tactics, and scheduling of media.

CO3 Gather knowledge of underlying criteria for evaluating the advantages and failure in data sources, media research, media mix and media strategies.

CO4 Develop a sense of judgment when evaluating media with the help of different media measurement metrics and media buys.

Course (Paper) Name and No.: HRM in Global Perspective

CO1 Explain the key term, theories and demonstrate it in field of IHRM

CO2 Define the basic concepts of Expatriates and Repatriates and relate it with challenges faced by Expatriates and Repatriates

CO3 Analyse the global cross culture and workforce management and relate it with reference to Human Resource Management.

CO4 Evaluate HRM trend and assess its Challenges

Course (Paper) Name and No.: Organisational Development

CO1 Interprete the basics of Organizational Development & role of OD practitioner.

CO2 Evaluate the implementation of OD interventions and judge their usefulness against other change tools and techniques.

CO3 Formulate an approach for organization development in response to appropriate organizational diagnosis, business imperatives and internal and external contextual forces.

CO4 Describe the data and explains the effectiveness of OD interventions;

Course (Paper) Name and No.: HRM in Service Sector Management

CO1	Define the concept and growing importance of HRM in the service sector.
CO2	Illustrate the ways of managing human resources in the service sector.
CO3	Adapt to the trending issues and challenges of HR in various service sectors.
CO4	Analyse the significance of the human element in creating customer satisfaction through service quality.

Course (Paper) Name and No.: Indian Ethos in Management

CO1	Adapt values and practice of IE in management
CO2	Demonstrate correlation between traditional and modern management system
CO3	Analyze the stress management techniques and discover its wide spectrum.
CO4	Explain concept and importance of learning and relate to system of India

Course (Paper) Name and No.: Operation Research

CO1	Define and formulate linear programming problems and appreciate their limitations
CO2	Interpret and solve complex problems by minimizing cost
CO3	Develop mathematical skills to analyze and solve networking models arising from a wide range of applications.
CO4	Identify parameters that will influence the optimal solution.

Programme- M.Com. (Advanced Accountancy)

Programme Outcomes

PO1 After completing two years for Masters in Commerce (M.Com) programme, students would gain knowledge in conventional as well as contemporary areas in the discipline of Commerce and Accountancy.

PO2 The Commerce and Accountancy focused curriculum offers specialization in various areas of Accountancy which would equip the student to face the modern-day challenges in commerce and business and they will be prepared to accept responsibilities in the business world

PO3 To enable the students for conducting business, accounting and auditing practices

PO4 Learners will be able to prove proficiency in pursuing higher and professional studies and advance research in various disciplines of commerce

PO5 Inculcate the element of research amongst the learners through projects, to develop their overall personality

Course Outcomes

Class: M. Com. I

Semester I

Course (Paper) Name and No.: Business Ethics and Corporate Social Responsibility

CO1 Summarise Concept of Business Ethics , Indian Ethos, Various Approaches to Business Ethics and Gandhian Approach in Management.

CO2 Infer Ethical Practices followed by business firms, concept and Regulatory framework of corporate Governance.

CO3 Analyse concept of CSR, CSR activities performed by Indian Corporation, Models and Prestigious Awards for CSR.

CO4 Evaluate CSR towards stakeholders, Designing CSR policy, Global Recognition of CSR.

Course (Paper) Name and No.: Strategic Management

CO1 extend their knowledge on the various levels of strategies and its functions in business

CO2 distinguish the various strategic analysis and selecting the best alternatives for implementation

CO3 develop an understanding on Corporate Restructuring Strategies, Strategic Alliance, Public Private Participation and IT driven strategies

CO4 determine the importance of BPO & KPO in India, Business Process Reengineering and Disaster Management

Course (Paper) Name and No.: Cost and Management Accounting

CO1 Solve the problems based on Cost Accounting Standard.

CO2 Calculating the profitability of business using marginal costing techniques

CO3 Assessing the decision to be made under different alternatives under marginal costing

CO4 Gathering importance of costing techniques and methodology

Semester II

Course (Paper) Name and No.: Research Methodology for Business

CO1 interpret the importance of research, research design, hypothesis and sampling

CO2 apply the research process in collecting primary and secondary data

CO3 perceive the different tools and techniques in data analysis, data interpretation and hypothesis testing

CO4 develop an understanding on the different styles of report writing and modern practices in research

Course (Paper) Name and No.: E-Commerce

CO1 Outline the evolution of E-commerce, Models of E-commerce.

CO2 Extend their knowledge on World wide Web and E-enterprise.

CO3 Analyse E- Marketing and Electronic Payment System.

CO4 Evaluate Legal and Regulatory Environment and security Issues of E-Commerce.

Course (Paper) Name and No.: Corporate Finance

CO1 Explain the Scope and objectives of Financial Management.

CO2 Calculating the Present Value, Annuity, Techniques of Discounting, Techniques of Compounding, Bond Valuation and YTM

CO3 Examine Application of Capital Budgeting.

CO4 Solving the problems on Cost of Capital, Capital Structure Decisions and Business Risk and Financial Risk

Class: M. Com. II

Semester III

Course (Paper) Name and No.: Advanced Financial Accountancy

CO1 Learners are able to develop the concept of foreign currency conversion.

CO2 Learners are able to develop the concept of final accounts and statutory requirements of Banking companies.

CO3 Learners are able to develop the concept of final accounts and statutory requirements of insurance companies.

CO4 Learners are able to develop the concept of final accounts and statutory requirements of co-operative Societies.

Course (Paper) Name and No.: Direct Tax

CO1 Learners have precise understanding of all basic concepts of Direct Tax.

CO2 Learners are able to differentiate between Income Taxable & Exempt Income along with the determination of Residential Status of Assesse.

CO3 Learners will be able to segregate the Income into the various Heads of Income and compute the tax liability according to the applicable provisions.

CO4 Learners become aware of the various deductions available to Assesse from the Gross Total Income .

CO5 Learners will calculate the Tax liability of Individuals , Firms & Company.

CO6 Learners understand the procedure for filing of Income Tax Returns

Semester IV

Course (Paper) Name and No.: Corporate Financial Accounting

CO1 Learners are able to develop the concept of corporate financial reporting.

CO2 Learners are able develop the concept of International Financial Reporting Standard.

CO3 Learners are able to develop the concept of valuation of business for amalgamation and merger.

CO4 Learners are able to develop the concept consolidated financial statement

Course (Paper) Name and No.: Indirect Tax (G.S.T)

CO1 Learners will get precise understanding of the definitions, concepts and title under G.S.T.

CO2 Learners become aware of the rules & procedures for registration under G.S.T.

CO3 Learners are able to compute the Tax liability & place of collection of Tax under Integrated G.S.T. Act 2017.

CO4 Learners are able to differentiate between origin & movement of goods & services under the Integrated G.S.T Act 2017.

CO5 Learners learn the procedure for Challan generation , time & amount of tax along with the provisions for T.D.S and T.C.S.

Course (Paper) Name and No.: Advanced Cost Accounting

CO1 Learners are able to develop the concept of Process Costing.

CO2 Learners are able to develop the concept of Cost allocation and Activity Based Costing system.

CO3 Learners are able to develop the concept of Responsibility Accounting.

CO4 Learners are able to develop the concept of Strategic Cost Management.

Course (Paper) Name and No.: Financial Management

CO1	Learners are able to develop the concept of types of financing.
CO2	Learners are able to develop the concept of Investment decisions and capital budgeting.
CO3	Learners are able to develop the concept of Working Capital Management.
CO4	Learners are able to develop the concept Financial Planning.
CO5	Learners are able to develop the concept Financial Policy and strategic management

Faculty of Science

Department of Chemistry

Programme Specific Outcomes

PSO1 The students will have sound understanding of fundamental and application based principles and theories in Physical, Inorganic, Organic and Analytical Chemistry

PSO2 Students will learn various techniques to perform scientific experiments as well as accurately record and analyse the results of such experiments

PSO3 Student will learn the usage of analytical instruments, select, and apply appropriate techniques and resources for the analysis

PSO4 Extensive laboratory and classroom work will skill the students with in problem solving, critical thinking and analytical reasoning as applied to scientific problems

PSO5 Students will be acquainted with new areas in both chemistry and allied fields of science and technology

PSO6 Students will understand the applications and impact of the chemistry in societal, and environmental contexts, and demonstrate it's knowledge and need for sustainable development

PSO7 Students will learn to apply ethical practices such as limited and safe use of hazardous chemicals, responsibility toward environmental and health safety

PSO8 Students will be able to work in team and thus get prepared as a perfect professional chemist with respect to knowledge, responsibility and teamwork

Course Outcomes

Class: F.Y.B. Sc. Chemistry

Semester I

Course (Paper) Name and No.: Paper I

CO1	Recall thermodynamics terms, the first law of thermodynamics and terms like normality, molality.
CO2	Solve the Numerical problems based on the Concentration of solutions
CO3	Classify the elements according to electronic configuration and explain details of periodic trends and atomic structure.
CO4	Explain the name, bonding and structure of organic compounds, bond fission, types of organic reactions and various electronic effects

Course (Paper) Name and No.: Paper II

CO1	Write projection formulas of given compounds.
CO2	Outline the metallic and non-metallic nature, oxidation states, electronegativity, Anomalous behavior and allotropy of main group elements.
CO3	Explain the reactivity of group 1 and group 2 elements and the effects of Oxides of carbon, sulfur and nitrogen on the environment.
CO4	Explains the rules of integration, and derivatives.

Course (Paper) Name and No.: Practical

CO 1	Find exact concentration of the solutions and enthalpy of dissolution.
CO 2	Apply chemical kinetics law to calculate the rate constant of the reaction.
CO 3	Find the normality of acids and bases and purity of samples gravimetrically.
CO 4	Apply Thin Layer Chromatographic (TLC), Distillation, Recrystallization, Sublimation methods for separation of a mixture.

Semester II

Course (Paper) Name and No.: Paper I

CO1 Explain deviations from ideal gas laws, Thomson effect and nanotechnology with the experimental setup.

CO2 Define the equilibrium constant, Le-Chatelier Principle and the second law of thermodynamics.

CO3 Discuss basic terms of co-ordination chemistry, qualitative analysis and acid-base theories

CO4 Identify the products of reactions of alkanes, alkenes and alkynes

Course (Paper) Name and No.: Paper II

CO1 Classify between aromatic, anti-aromatic, and non-aromatic compounds.

CO2 write the mechanism of the Electrophilic aromatic substitution reaction

CO3 Identify the shapes of molecules with and without lone pair of electrons and The oxidation number of elements to balance the redox equations.

CO4 Explain Law of crystallography, Different types of interaction of electromagnetic radiation with matter, Degree of ionization and Henderson equation for acidic and basic buffers.

Course (Paper) Name and No.: Practical

CO1 Apply chemical kinetics law to calculate the rate constant of reaction.

CO2 Make use of colorimeter and pH meter

CO3 Identify cations and anions from the given mixture of compounds and percentage of metal present in the sample by titration.

CO4 Identify organic compound containing C, H (O) N, S, X elements

Class: S.Y.B. Sc. Chemistry

Semester III

Course (Paper) Name and No.: General Chemistry - I

CO1 Illustrate the equation of Gibbs free energy, Chemical potential, Transport number and degree of Ionization.

CO2 Explain different types of ionic crystals and hybridizations.

CO3 Construct the molecular orbital diagram of homonuclear diatomic molecules.

CO4 Compare the different properties, reactions and reactivity of alkyl/aryl/halides/ organometallic compounds/alcohol, Phenol and epoxide.

Course (Paper) Name and No.: General Chemistry-II

CO1 Explain complex chemical reactions, Collision and activated complex theory, effect of temperature on Arrhenius equation, thermodynamics of ideal solutions.

CO2 Summarize the chemistry of Boron, Silicon and Germanium compounds.

CO3 Recall the facts and basic concepts like a distillation of solution, Haber process and role of active methylene compounds.

CO4 Construct the names and methods of preparation of carbonyl group compounds.

Course (Paper) Name and No.: Analytical chemistry III

CO1 Classify analytical methods and errors in analysis.

CO2 Outline the methods of calibration of tools used and preparations for titrimetric analysis.

CO3 Explain the principles of titrimetric analysis and UV-Visible spectroscopy.

CO4 Apply statistical methods to treat the analytical data.

Course (Paper) Name and No.: Practical

CO1	Determination of various constants such as solubility products, dissociation constant, rate constant based on physical principles.
CO2	Identify the ions in inorganic salts.
CO3	Demonstrate the effectiveness of crystallization as a separation technique.
CO4	Infer the obtained results effectively presentation.

Semester IV

Course (Paper) Name and No.: General Chemistry I

CO1 Explain thermodynamics properties, equilibrium constant and different types of electrode.

CO2 Illustrate Gibb's Phase rule, Phase diagram of one and two component system with examples.

CO3 List the properties of transition metal compounds and different types of isomers in coordination compounds.

CO4 Compare properties, acidity, preparations, reactions, the nucleophilicity of acyl substituents of carboxylic acid and stereochemistry.

Course (Paper) Name and No.: General Chemistry-II

CO1 Explain the law of crystallography, types of crystal, Interplanar distance in the lattice, types of catalysis, Mechanisms and Kinetics of catalyst.

CO2 Explain the concept of hydration of cations and anions with respect to the effect of charge and radius.

CO3 Identify the hazardous effect of air pollutants like sulphuric acid, nitric acid and phosphoric acid

CO8 Outline the synthesis, reaction of amines and heterocyclic compounds like Furan, Pyrrole, Thiophene.

Course (Paper) Name and No.: Analytical chemistry III

CO1 Classify various separation methods based on their principles.

CO2 Discuss the principles, construction and working of instrumental techniques based on the electrochemical properties of the analytes.

CO3 Describe chemical methods of analysis and their suitable parameters.

CO4 Apply the analytical methods to determine the physicochemical of environmental analysis.

Course (Paper) Name and No.: Practical

CO1 Find emf, amount of acid, acid strength potentiometrically.

CO2 Compare the strength of HCl and H_2SO_4 by kinetically.

CO3 Calculate the amount from the given sample conductometrically and gravimetrically.

CO4 Analyze qualitatively bifunctional organic compounds.

Class: T.Y.B. Sc. Chemistry

Semester V

Course (Paper) Name and No.: Physical Chemistry

CO1 Select the type of spectrum such as rotational, vibrational, Raman for given molecules using molecular spectroscopy, and make use of data to solves different numericals.

CO2 Relates the equations of mole fraction and molecular weight of different colligative properties, distinguishing with examples of collision theory and activated complex theory.

CO3 Explain terms involved in nuclear chemistry and outline detection and measurement of radioactivity using G.M. Counter and Scintillation counter method.

CO4 Summarize colloidal systems in various class and use to apply various catalyst in reactions

Practical's

CO1 Interpret the order of chemical reaction by calculation and graphically and determine molecular weight of polymer using viscosity measurement.

CO2 Demonstrate practical handling skills based on instruments such as conductometry, colorimetry, potentiometry.

Course (Paper) Name and No.: Inorganic Chemistry

CO1 Explain concept of Superconductivity, types of super conductors and its applications, imperfections in solids and their effect on properties chemistry of inner transition elements, extraction and applications, chemistry of non-aqueous solvents

CO2 Compare chemistry of Group 16 elements and Group 17 elements.

CO3 Assign the point group for given molecules using basic concepts of molecular symmetry and construct molecular orbital diagrams for heteronuclear diatomic molecules and polyatomic species.

CO4 Determine packing density of different types of cubic unit cells

Practical's

CO1 Develop the practical skills for preparation of different inorganic metal complexes

CO2 Examine the percentage purity of the inorganic compounds qualitatively and quantitively and impurity identification.

Course (Paper) Name and No.: Organic Chemistry

CO1 Explain the fate of the excited molecule in photochemistry and systematic study of photochemical reactions.

CO2 Relate the reactivity and reactions of organometallic, heterocyclic compounds and their synthesis

CO3 Apply the concepts in writing and predicting the mechanism of organic reactions.

CO4 Examine the spectral data of UV-Visible, IR, NMR and Mass spectroscopy for structure elucidation of organic compounds.

Practical's

CO1 Identify chemical type of components present in binary mixture of solid-solid mixture and unknown organic compound by micro-scale technique.

CO2 Apply skills in the separation and qualitative analysis of organic compounds of solid-solid mixtures by microscale technique.

Course (Paper) Name and No.: Analytical Chemistry

CO1 Define the quality concepts, chemical standards certified reference materials, various grades of chemicals and sampling methods

CO2 Contrast solvent and solid phase extraction methods

CO3 Discuss the principles and instrumentation of different spectroscopic methods

CO4 Evaluate the various concentrations based on weight and volume and their interconversions.

Practical's

CO1 Demonstrate the analytical skills in the quantitative analysis of variety of samples

CO2 Interpret the results of a chemical analysis and effectively communicate in the form of written reports in laboratory journal

Course (Paper) Name and No.: Drugs

CO1 Define the routes of administration, methods of ingestion, tolerance, withdrawal and interactions of these drugs with other psychoactive and nonpsychoactive drugs.

CO2 Explain details about the pharmacodynamics agents used for the treatment of different diseases side effects and synthesis.

CO3 Classify the dyes based on applications and dyeing methods

CO4 Make use of Unit processes required for the synthesis of dyes intermediates

Practical's

CO1 Synthesis of simple drugs i.e asprin

CO2 Estimation of Ibuprofen.

CO3 The acid-neutralizing capacity of antacid

CO4 Project on cotton dyeing

Semester VI

Course (Paper) Name and No.: Physical Chemistry

CO1 Classify chemical and concentration cells with and without transferences

CO2 Summarize preparation methods and characterization techniques of nanomaterials.

CO3 Classify polymers in various class and determine the average molecular weight of polymers using various methods

CO4 Explain physical aspects of NMR spectroscopy in details and classify the systems using phase rules

Practical's

CO1 Determine molecular weight by Rast method and order of reaction by fractional change method and Explain the adsorption phenomenon and the validity of dsorption isotherm.

CO2 Demonstrate practical skills based on instruments such as conductometry, pH meter, potentiometry

Course (Paper) Name and No.: Inorganic Chemistry

CO1 Demonstrate the knowledge of organometallic chemistry, and metallurgy.

CO2 Explain the chemistry of Group 18 elements, preparation and structures of xenon compounds and biological importance of metal ions.

CO3 Construct molecular orbital diagram of different coordination compounds, Analyse the electronic spectra of complexes.

CO4 Measure Crystal field stabilization energy (CFSE) for octahedral complexes using basic concepts of Crystal Field Theory.

Practical's

CO1 Develop the practical skills for preparation of different inorganic metal complexes

CO2 Examine the percentage purity of the inorganic compounds qualitatively and quantitively and impurity identification.

Course (Paper) Name and No.: Organic Chemistry

CO1 Explain stereoselectivity, stereospecificity, mechanism and stereochemistry of substitution, elimination and addition and rearrangement reactions.

CO2 Classify polymers and its preparation, functional group transformation and selectivity of reagents and catalyst in organic synthesis.

CO3 Construct the structures of carbohydrates and its interconversion, describe the structures of proteins, nucleic acids and its components.

CO4 Interpret the analytical and chemical evidences for structure elucidation of natural products

Practical's

CO1 Demonstrate the separation of the liquid-liquid and solid-liquid mixtures by fractional distillation.

CO2 Plan organic synthesis with calculations, stoichiometry, aspects of synthesis and predictions of spectral data in IR and NMR of the reactant and product.

Course (Paper) Name and No.: Analytical Chemistry

CO1 Illustrate the principles of polarography and amperometric titration

CO2 Extend the theoretical principles to the range of applications of TGA, DTA and NAA

CO3 Classify the advanced chromatographic techniques based on mobile phases and stationary phases, modes of separation and their instrumental details and applications in industry

CO4 Apply the suitable analytical method for food and cosmetic analysis

Practical's

CO1 Explain the theory behind the separation of ions by ion exchange chromatography and analysis of commercial samples and waste water samples

CO2 Interpret the measured data after numerical or graphical treatment

Course (Paper) Name and No.: Drugs

CO1 Explain details about the chemotherapeutic agents used for the treatment of different diseases side effects and synthesis.

CO2 Explain drug discovery design and development and drug metabolism and application of nanoparticles in medicinal chemistry.

CO3 Classify the dyes based on Chemical Constitution and preparations

CO4 Explain the non-textile uses, Health and Environmental Hazards of the dyes

Practical's

CO1 Synthesize, Crystallization Physical constant, Apply the o-Methylation step to different phenols

CO2 Propose the acetylation method of aromatic amines

CO3 Examine monograph

CO4 Apply the TLC technique for the separation of the mixture of dyes

Department of Microbiology

Programme Specific Outcome

PSO1 The program is aimed at equipping the students with basic knowledge in various branches of Microbiology such as Microbial Genetics, Molecular Biology, Virology, Medical Microbiology, Immunology, Microbial Biochemistry and Industrial Microbiology. Additionally, it also makes students aware of interdisciplinary sciences such as Bioinformatics and Bioinstrumentation

PSO2 At the end, student will have employability in food industry, pharmaceutical industry, Agricultural industry and fishery. Students will work as microbiologist in QA and production departments

PSO3 Students will develop basic understanding of the subject and will have developed life skills to solve environmental and hygiene related problems

Course Outcomes

Class: F.Y.B. Sc. Microbiology

Semester I

Course (Paper) Name and No.: Fundamentals of Microbiology-I

CO1 Define types of bonds associated in chemical interactions

CO2 Explain the properties of macromolecules essential for life

CO3 Demonstrate the knowledge on the contribution of scientists in the field of microbiology

CO4 Distinguish between eukaryotic & prokaryotic cell structure and function

Course (Paper) Name and No.: Basic Techniques in Microbiology-II

CO1 Explain the basic techniques used in the microbiology

CO2 Classify the bacteria by using the conventional and modern techniques.

CO3 Examine the morphological characteristics of microorganisms

CO4 Define the various terms used in the field of Microbiology

Course (Paper) Name and No.: Practicals

CO1 Apply staining techniques used for the microscopic study of bacterial morphology and cell organelles of eukaryotic cells.

CO2 Analyze the macromolecules found in test samples

CO3 Demonstrate the effect of physicochemical agents onto the growth of various microorganisms

CO4 Demonstrate knowledge of microscope handling, Laboratory safety, inoculation techniques and media preparation

Semester II

Course (Paper) Name and No.: Basics of Microbiology II

CO1 Relate key characteristics/differences among protozoa, algae, fungi, slime molds and myxomycetes

CO2 Classify the viruses based on their general features.

CO3 Compare between turbidometry and nephelometry methods for cell density measurement

CO4 Calculate the generation time of bacteria using growth curve

Course (Paper) Name and No.: Exploring Microbiology

CO1 Recite general characteristics of eubacteria and archaebacteria

CO2 Describe the interaction among microbes and human health

CO3 Demonstrate the knowledge of microscopic technique for the study of world of microbes

CO4 Compare the normal microbial flora of human body

Course (Paper) Name and No.: Practicals

CO1 Compare the morphological characteristics of various fungi isolated from soil sample

CO2 Verify the Beers law by using colorimeter

CO3 Determine the microbial cell number by using Breed's count, Browns opacity tube and Hemocytometry

CO4 Detect virulence factor- Lecithinase, Coagulase & hemolysin activity of microorganism

Class: S.Y.B. Sc. Microbiology

Semester III

Course (Paper) Name and No.: I : Estimation of Biomolecules and Introduction to Bioenergetics and Biostatistics

CO1 Explain the method of extraction and estimation of biomolecules.

CO2 Apply concept of thermodynamics to bioenergetics.

CO3 Solve biostatistical problems related to measurement of central tendency and dispersion.

CO4 Determine concentration of solutions in terms of molarity, normality molality, osmolarity, mole fraction etc.

Course (Paper) Name and No.: II: Introduction to fermentation technology and Applied Microbiology

CO1 Compare primary and secondary screening methods.

CO2 Explain the parts of the fermenter and its type.

CO3 Apply standard microbiological techniques for the testing and preservation of milk /food.

CO4 Demonstrate the understanding of techniques used for wastewater management and treatment

Course (Paper) Name and No.: III: Introduction to Microbial Genetics and Molecular Biology

CO1 Compare the structure and biochemistry of DNA and RNA, nucleotides, and their types.

CO2 Explain the methods of DNA sequencing like Maxam & Gilbert and Sanger's method.

CO3 Categorize the different types of mutations which may occur in DNA and their repair mechanisms.

CO4 Enlist the basic concepts of steps involved in DNA replication and protein synthesis.

Course (Paper) Name and No.: Practicals

CO1 Estimate concentration of biomolecules using colorimetric methods.

CO2 Analyze food, milk, and water samples for their microbiological qualities.

CO3 Experiment with DNA for its estimation, separation, and visualization

CO4 Demonstrate skills for isolation for screening of antibiotic producer and organic acid producer

Semester IV

Course (Paper) Name and No.: I: Introduction to Metabolism and Enzymology

CO1 Explain the concepts of metabolism and metabolic pathways.

CO2 Develop kinetic model of enzyme Inhibition

CO3 Compare solute uptake mechanisms of bacteria

CO4 Illustrate preparation of vesicles for study of solute uptake

Course (Paper) Name and No.: II: Introduction to Medical Microbiology and immunology

CO1 Define various terms associated with Epidemiology.

CO2 Explain the importance of pathogenic bacteria in human disease concerning infections of the respiratory tract, gastrointestinal tract, skin, and nervous system.

CO3 Classify the types of immune systems, cells involved in the immune system.

CO4 Select the immunological and molecular techniques for disease diagnosis.

Course (Paper) Name and No.: III: Advances Analytical Techniques, Soft Skills and Applications of Microbiology

CO1 Define the basic terms involved in Bioinformatics.

CO2 Explain the importance of research work, research planning and interpretation of data.

CO3 Develop the understanding of principle, working and applications of separation and spectrophometric techniques of Centrifugation, Chromatography and Spectrophotometry.

CO4 Categorize the distinct types of Biosensors and Nanoparticles.

Course (Paper) Name and No.: Practicals

CO1 Experiment with enzyme for determination of Km, Vmax and, effect of pH and Temperature on enzyme activity.

CO2 Determine biochemical characteristics of bacteria

CO3 Demonstrate skills for separation techniques such as Paper chromatography, Thin layer chromatography, Column chromatography and Cell sizing.

CO4 Formulate a scientific report/Abstract

Class: T.Y.B. Sc. Microbiology

Semester V

Course (Paper) Name and No.: I : Microbial Genetics I

CO1 Explain the fundamental principles of Central dogma of life

CO2 Co –relate between prokaryotic and eukaryotic DNA replication, transcription, and translation

CO3 Compare the various gene exchange mechanisms found in microorganisms

CO4 Determine the role of mutagenic agents and their effects onto the growth of living cells

Course (Paper) Name and No.: II: Medical Microbiology & Immunology

CO1 Explain mode of transmission, diagnosis, prophylaxis and treatment of respiratory, gastrointestinal skin diseases and virulent factors of pathogen.

CO2 Describe the structure and function of immunoglobulins, cells and organs involved in formation of adaptive immune response.

CO3 Analyze the mechanism of antigen antibody reaction and its application in diagnosis of various infections.

CO4 Compare Koch postulates and molecular Koch postulates in identification of pathogen.

Course (Paper) Name and No.: III: Microbial Biochemistry I

CO1 Explain mechanism of generation of electrochemical energy and ATP synthesis

CO2 Demonstrate EMP, ED, HMP pathways and TCA cycle.

CO3 Differentiate between catabolism and anabolism of lipids

CO4 Deduct fermentation pathways

Course (Paper) Name and No.:IV: Bioprocess Technology Part-I

CO1 Explain the techniques of strain improvements in Industrial Microbiology.

CO2 Develop the design of bioreactors and media for fermentation under different conditions.

CO3 Select the procedures and techniques for the upstream and downstream process of fermentation.

CO4 Compare traditional industrial fermentation such as Beer, Wine, Vinegar, etc.

Course (Paper) Name and No.:V: Applied component Biotechnology

CO1 Apply knowledge to carry out biophysical techniques (electrophoresis, spectrophotometry) in biotechnology

CO2 Apply techniques for engineering biomolecules industrial and marine organisms for potential applications

CO3 Compare the mechanisms of generating transgenic animals

CO4 Create strategies to bioremediate the pollutants from soil

Course (Paper) Name and No.: Paper I and II (Practicals)

CO1 Develop experimental skill while performing fundamental molecular biology experiments

CO2 Apply ultraviolet rays for the induction of mutation in microbial cell

CO3 Identify the causative microorganism from different pathological samples using cultural and biochemical analysis

CO4 Interpret the presence of causative agent such as Candida albicans and Mycobacterium species in the patient's sample using microscopic technique

Course (Paper) Name and No.: Paper III and IV (Practicals)

CO1 Determine phosphatase activity

CO2 Differentiate between homo- and hetero-fermenters.

CO3 Determine sugar concentration by Cole's Ferricyanide method and Alcohol concentration by Dichromate method.

CO4 Demonstrate the knowledge of alcohol fermentation with respect to process, efficiency determination, sugar, and alcohol tolerance determination of yeast.

Course (Paper) Name and No.: Paper V (Practicals)

CO1 Explain the details on cultivation of mushroom

CO2 Apply techniques to explore marine microorganisms

CO3 Develop knowledge on the role of microorganisms in industrial and marine biotechnology

CO4 Formulation of biopesticide using *Bacillus thuringiensis*

Semester VI

Course (Paper) Name and No.: Microbial Genetics I

CO1	Explain basic tools and steps involved in r- DNA technology
CO2	Find In-Silico Analytical techniques used in Bioinformatics and Proteomics
CO3	Classify viruses based onto their general structure, genetic material, and life cycle
CO4	Explain the regulation of genes expression at molecular level

Course (Paper) Name and No.: II: Medical Microbiology & Immunology

CO1	Explain the structure and role of T & B cells in adaptive immune response.
CO2	Differentiate between modes of action of different chemotherapeutic agents in disease treatment.
CO3	Evaluate the mode of transmission, pathogenesis and treatment of central nervous system and sexually transmitted diseases.
CO4	Describe the role of vaccines in disease prevention, complement system in immune response.

Course (Paper) Name and No.: III: Microbial Biochemistry II

CO1	Describe general reactions of amino acid metabolism and amino acid fermentation
CO2	Summarize factors affecting catalytic efficiency of enzymes.
CO3	Analyze the regulatory mechanism of a pathway
CO4	Judge the assimilatory and dissimilatory pathways of inorganic metabolism

Course (Paper) Name and No.:IV: Bioprocess Technology Part II

CO1 Explain the industrial production of bioinsecticides, biofertilizers, and biopolymers such as xanthan gum, PHA, alginate, etc.

CO2 Apply the knowledge of principles and applications of animal and plant tissue culture techniques, and immobilization techniques.

CO3 Build the understanding of IPR, Patent, Criteria for patentability, Indian patent act, Role of the patent in R & D.

CO4 Compare industrial fermentation such as Penicillin, Mushroom, Glutamic acid, etc.

Course (Paper) Name and No.:V: Applied component Biotechnology

CO1 Explain the role of biotechnology in society

CO2 Examine the role of biotechnology in healthcare sector (animal & human healthcare, genetic counselling, and forensic medicine)

CO3 Inspect problems related to genetic engineering in plant biotechnology

CO4 Interpret the issues of bioenergy and biofuel in the world

Course (Paper) Name and No.: Paper I and II (Practicals)

CO1 Use methodology for molecular and colorimetric methods for isolation of macromolecules from microorganism.,

CO2 Analyze sequences using bioinformatics tools for local and global alignment.,

CO3 Estimate MIC and MBC of antibiotics, sensitivity, and resistance of antibiotics by Kirby-Bauer Method.,

CO4 Interpret blood type, and diagnose syphilis, typhoid infection by antigen antibody reaction.,

Course (Paper) Name and No.: Paper III and IV (Practicals)

CO1	Estimate concentration of protein by Lowry's method and UV absorption.
CO2	Determine kinetics of enzyme inhibition
CO3	Test for determination of unknown concentrations of antibiotic and growth factor using bioassay.
CO4	Demonstrate the knowledge of determining bioburden of samples.

Course (Paper) Name and No.: Paper V (Practicals)

CO1	Demonstrate the presence of carbohydrates using chemical reagents
CO2	Construct knowledge on the role of microorganisms in industrial biotechnology
CO3	Develop immobilized microbial cells using calcium alginate
CO4	Estimate the cellulase activity of microorganisms

Department of Biotechnology

Programme Specific Outcome

PSO1 Students will learn the basic concepts of Chemistry and analytical chemistry applied in Biological Sciences.

PSO2 An education in Cell biology, Biochemistry, Animal and plant physiology, human genetics and Immunology will impart knowledge to the students about cellular structure, biomolecules, metabolic pathways, its regulation along with defense mechanism and physiological processes in plants and animals.

PSO3 Students will also learn the concepts of biodiversity, ecology environment and its conservation.

PSO4 Students will gain basic information of microbial cultures, sterilization methods and enzyme production. They will be taught bio-safety guidelines and good laboratory practices.

PSO5 Introduction of recent topics like Drug delivery, Marine biotechnology, Bioinformatics will impart knowledge of mechanism of drug delivery, drug designing and applications of marine organisms as food, neutraceutical and cosmetics etc.

PSO6 Students will understand the principles and the applications of molecular biology and genetic engineering methods with an emphasis on the application of recombinant DNA technology to animals, plants and microbial organisms.

PSO7 The course will give the knowledge of Bioethics, IPR, entrepreneurship, scientific writing Communication, and management skills to the students.

PSO8 Students will get hands on training of techniques used in Cell Biology, Biochemistry, Microbiology, Immunology, Molecular Biology and Genetic Engineering.

Course Outcomes

Class: F.Y.B. Sc. Biotechnology

Semester I

Course (Paper) Name and No.: Paper I Basic Chemistry

CO1 The students will be acquainted with the basic concepts of Chemistry like Classification and Nomenclature of Chemical compounds.

CO2 Students will know about the different types of chemical bonds with their significance.

CO3 Student will be able to understand the concept of stereochemistry and will be able to solve the problems on it.

CO4 Students will be able to understand the isomerism which will provide them insight of chemical structures and their geometry.

Course (Paper) Name and No.: Paper II Analytical Chemistry

CO1 Students will use the knowledge regarding chemical calculations and calibrations of glassware and its importance in research.

CO2 Students will use knowledge of titrimetric and volumetric analysis.

CO3 Students will learn to handle basic analytical techniques and tools like chromatography and colorimetry.

CO4 They will learn to solve numerical problems used in preparation of reagents.

Course (Paper) Name and No.: Paper III Biodiversity and Ecology

CO1 Understanding of environmental conservation processes and its importance, pollution control, biodiversity and protection of endangered species by students.

CO2 The students will acquire the knowledge of microbial and viral cell structure; growth and metabolism understand the microbial diversity, taxonomy and dynamics of microbial interactions with other populations.

CO3 The student will be able to learn basic concepts of virology.

CO4 The student is able to define scientific models and questions about the effect of complex biotic and abiotic interactions on all biological systems, from cells and organisms to populations, communities and ecosystems.

Course (Paper) Name and No.: Paper IV Basic Microbiology

CO1 Students are able to know principle, working, ray diagram application of microscope and advanced microscope. Students will be able to develop skill for visualization of microorganisms with different staining techniques.

CO2 Students will learn how different types of chemical and physical methods of sterilization can be applied on laboratorial scale as well as industrial scale.

CO3 Students will understand the growth and reproduction of bacteria. Students will be able to understand the enumeration techniques for microorganisms.

CO4 Students will understand and perform the basic growth and cultivation techniques of microorganisms.

Course (Paper) Name and No.: Paper V Introduction to Biotechnology & Cell Biology

CO1 Students will gain knowledge about field of Biotechnology.

CO2 Students will be able relate the morphological changes that occur in transformed cells.

CO3 Students will gain the knowledge: how cells conduct, coordinate, and regulate cell division.

CO4 Students will be familiar with cytological differences between components of prokaryotic and eukaryotic cells

Course (Paper) Name and No.: Paper VI Genetics

CO1 Students will gain knowledge of the fundamental molecular principles of genetics.

CO2 They will learn the basic Mandelian laws and terms use in genetics.

CO2 They will understand the relationship between phenotype and genotype in human genetic traits.

CO3 Students will gain basics of genetic mapping.

Semester II

Course (Paper) Name and No.: Paper-I (Biochemistry)

CO1 Student will acquire the knowledge of chemistry of water and Buffer solutions.

CO2 Students will have knowledge of structure and functions of biomolecules like carbohydrates, lipids and proteins.

CO3 Students will have knowledge of structure and functions of amino acids and proteins.

CO4 Student will acquire the basic knowledge of protein sequencing,

Course (Paper) Name and No.: Paper II (Bioorganic Chemistry –II)

CO1 To impart the skill of kinetics and reactions.

CO2 Understand basic terms used in thermodynamics.

CO3 Learn first and second law of thermodynamics and its expression in terms of relationship between Heat (q), work (w) and internal energy (U).

CO4 To impart the knowledge of Principles of oxidation and reduction reactions.

Course (Paper) Name and No.: Paper III (Plant and Animal Physiology)

CO1 Students will be able to explain how terrestrial vascular plants acquire and use the energy and material resources needed to complete their life cycle, relationships between structure and function, coordination of development, resource acquisition and environmental responses within and across cells, tissues and organs.

CO2 Students will be acquainted with plant water relationship and basic requirements of nutrients to plans and animals.

CO3 Using one or more model systems, students will be able to integrate the regulation of organ system functions in a whole animal using a conceptual model of feedback to explain homeostasis.

CO4 Students will be acquainted with concept of foods and nutrition.

Course (Paper) Name and No.: Paper-IV (Molecular Biology)

CO1 Students will be acquainted with structure of nucleic acids.

CO2 Students will be aware how replication takes place inside the cell & Distinguish between DNA template strand and new strand.

CO3 Students will gain knowledge regarding mutation (genetic variation or change in DNA sequence), predict whether or not that change would result in a change of function for the resulting protein (phenotypic change)

CO4 Students will be able to understand mechanism of DNA repair.

Course (Paper) Name and No.: Paper-V (Tissue Culture and Good Laboratory Practices)

CO1 Students will learn basic technical aspects of plant tissue culture technique like media preparation, seed sterilization, callus culture and maintenance of aseptic conditions. The skill could be applied in agriculture and crop improvement.

CO2 Students will learn to demonstrate foundational knowledge of Cell culture techniques and competence in laboratory technique.

CO3 Students will understand the highly specific requirements and intent of GLP regulation.

CO4 Students will understand the importance of documentations such as results reporting, SOPs, Study Plans and Protocol.

Course (Paper) Name and No.: Paper-VI (Enzymology, Immunology and Biostatistics)

CO1 Students will understand the basic concepts of Enzymology.

CO2 Students will understand the immune system, types of immunity and mechanism.

CO3 Students will enhance the knowledge of central tendencies.

CO4 Students will understand the compiling of data using biostatical tools.

Class: S.Y.B. Sc. Biotechnology

Semester III

Course (Paper) Name and No.: Paper- I (Biophysics)

CO1 Demonstrate the techniques like Microscopy and Spectroscopy.

CO2 Illustrate the concept of heat, sound and fluid dynamics.

CO3 Make use of various electrophoretic techniques

CO4 Explain the various fundamentals and applications of Biophysics

Course (Paper) Name and No.: Paper- II (Applied Chemistry –I)

CO1 Categorize the different types of Organic reactions and its mechanism.

CO2 Explain the synthesis of organic compounds and other methods of organic synthesis.

CO3 Apply the principles of green chemistry in industrial applications.

CO4 Utilize green chemistry to reduce environmental pollution.

Course (Paper) Name and No.: Paper-III (Immunology)

CO1 Elaborate on different types of immune cells and lymphoid organs, role of effector molecules and complement system.

CO2 Explain the cellular and molecular aspects of lymphocyte activation, differentiation, and memory.

CO3 Apply different techniques based on Antigen-antibody interactions.

CO4 Illustrate the immunological response and how it is triggered and regulated.

Course (Paper) Name and No.: Paper-IV (Cell Biology and Cytogenetics)

CO1 Explain the structure and functions Cytoskeleton

CO2 Illustrate the principles of membrane transport with different types of pumps and cell junctions.

CO3 Elaborate on Genetic Linkage and DNA recombination

CO4 Solve problems based on Two-point Cross; Three-point Cross, Pedigree and Tetrad analysis

Course (Paper) Name and No.: Paper-V (Molecular Biology)

CO1 Compare the Transcription processes in Prokaryotes and Eukaryotes

CO2 Explain the Gene Expression Translation and post TranslationalModifications

CO3 Classify different vectors and enzymes used in genetic engineering with their applications.

CO4 Discuss the Mechanism of Gene Expression and Regulation

Course (Paper) Name and No.: Paper-VI (Bioprocess Technology)

CO1 Select types of microorganisms used in industrial processes.

CO2 Explain the design of a Fermenter and different fermentation processes.

CO3 Outline different assays for industrial products.

CO4 Develop knowledge about pharmacokinetics parameters, drug formulation routes and half-life.

Course (Paper) Name and No.: Paper-VII (Research Methodology)

CO1 Define the Research problem and its types through research methodology.

CO2 Explain the overall Process of research design and experimental design.

CO3 Organize Research Study fromits inception to its Report and oral presentations.

CO4 Develop the knowledge of research Ethics in Scientific Writing and Research Publication.

Course (Paper) Name and No.: Biotechnology Practical of UBT3BPH and UBT3APC Course Code: UBT3PR1

CO-1 Utilize different Spectroscopic and microscopic techniques.

CO-2 Make use of Electrophoretic techniques for separation of various biomolecules.

CO-3 Analyze the different types of organic compounds.

CO-4 Estimate different types of organic compounds like Acetone, amide and benzoic acid.

Course (Paper) Name and No.: Biotechnology Practical of UBT3IMM and UBT3CBC Course Code: UBT3PR2

CO-1 Make use of various immunological techniques

CO-2 Apply different immune-techniques in diagnostics of various diseases.

CO-3 Construct genetic maps using tetrad analysis and three point cross

CO-4 Outline principle and working of protein detection techniques.

Course (Paper) Name and No.: Biotechnology Practical of UBT3MOB and UBT3BPT Course Code: UBT3PR3

CO-1 Elaborate various stages in bioprocess thatinvolve upstream and downstream processes.

CO-2 Experiment with the actualfermentation process some metabolites.

CO-3 Make use of microbiological techniques in manufacture of industrial products.

CO-4 Examine the various screening techniques.

Semester IV

Course (Paper) Name and No.: Paper-I (Biochemistry) UBT4BIC

CO1 Explain the different Metabolic pathways.

CO2 Summarize the Electron transport chain and energy rich compounds.

CO3 Illustrate metabolic reactions involved in carbohydrate and lipid metabolism.

CO4 Identify disorders associated with lipids and nucleotide metabolism.

Course (Paper) Name and No.: Paper-II (Applied Chemistry –II) UBT4APC

CO1 Categorize sampling and techniques.

CO2 Classify different types of Natural products on the basis oftheir structures.

CO3 Analyze natural products using Chromatographic techniques.

CO4 Explain basic concepts of Polymers and Nanomaterial.

Course (Paper) Name and No.: Paper-III (Medical Microbiology) UBT4MEM

CO1 Identify common infectious agents and summarizethe epidemiology of infectious diseases.

CO2 Interpret various disease factors and processes caused by different microorganisms.

CO3 Elaborate on pathogenesis, diagnosis and treatment involved in GI, STD and Nosocomial infections.

CO4 Explain the various aspects of Systemic Infections including Causative Agents, symptoms and Prophylaxis.

Course (Paper) Name and No.: Paper-IV (Environmental Biotechnology) UBT4ENB

CO1	Compare causes, types and control methods of Air, soil and water pollution.
CO2	Apply techniques used in Solid Waste Management.
CO3	Explain different global environmental problems and issues.
CO4	Elaborate on Bioremediation technology in environmental pollution.

Course (Paper) Name and No.: Paper-V (Bioinformatics and Biostatistics) UBT4BBI

CO1	Build the basic concepts and use of computers, internet.
CO2	Make use of various Biological database, multiple sequence alignment tools
CO3	Solve problems based on correlation and regression analysis
CO4	Test the hypothesis using z test, t test and x2 test

Course (Paper) Name and No.: Paper-VI (Molecular Diagnostics) UBT4MOD

CO1	Outline the techniques used in Basic Molecular diagnostics.
CO2	Construct the restriction map.
CO3	Infer the knowledge of different types of PCR and its quality control.
CO4	Identify DNA polymorphism and molecular diagnostic tools for infectious diseases with ethical, legal and social issues in regards to genetic counselling.

Course (Paper) Name and No.: Paper-VII (Entrepreneurship Development) UBT4END General Elective

CO1	Outline the concept and role of Entrepreneurs in Entrepreneurship Development.
CO2	Plan and set up the Enterprises through various resources.

CO3 Build enterprises and bio-business through innovations.

CO4 Explain the concept of Intellectual property rights, regulatory affairs and corporate laws.

Course (Paper) Name and No.: Biotechnology Practical of UBT4BIC and UBT4APC Course Code: UBT4PR1

CO1 Apply different estimation techniques in Biochemistry.

CO2 Demonstrate the organ Function tests: Liver (SGPT, SGOT) and Urine Analysis

CO3 Identify different types of organic compounds with known chemical types.

CO4 Infer the characterization of nanoparticles using different methods

Course (Paper) Name and No.: Biotechnology Practical of UBT4MEM and UBT4ENB Course Code: UBT4PR2

CO1 Develop skill for isolation, staining and identification of various microorganisms.

CO2 Make use of various Diagnostics techniques.

CO3 Evaluate the various parameters for effluent treatment.

CO4 Identify the microorganism used in bioremediation.

Course (Paper) Name and No.: Biotechnology Practical of UBT4 BBI and UBT4 MOD Course Code: UBT4 PR3

CO1 Apply basic practical techniques of bioinformatics.

CO2 Make use of various biological data bases.

CO3 Utilize the techniques for isolation and detection of nucleic acids.

CO4 Solve problems based on correlation, regression and non-parametric test

Class: T.Y.B. Sc. Biotechnology

Semester-V

Course (Paper) Name and No.: Paper-I (Cell Biology) UBT5CBI

CO1 Explain principles of cell signaling

CO2 Compare the stages, mechanisms and patterns of embryonic development in different model organisms.

CO3 Illustrate the plant developmental biology from early pattern formation in plants to organization of root and shoot meristem.

CO4 Elaborate on types, causes, diagnosis andtreatment of cancer

Course (Paper) Name and No.: Paper-II (Medical Microbiology & Instrumentation) UBT5MMI

CO1 Compare replication mechanisms used by viruses along with their cultivation, purification techniques

CO2 Analyze the importance of appropriate drug therapy by learning development of drug resistance mechanism

CO3 Explain the causes of newly emerging diseases and role of vaccines.

CO4 Illustrate the basic principles of spectroscopy and tracer techniques.

Course (Paper) Name and No.: Paper-III (Genomics & Molecular Biology) UBT5GMB

CO1 Make use of different methods of gene transfer in plants and animals.

CO2 Explain significance of GMOs.

CO3 Determine the sequences of DNA and the library screening methods.

CO4 Discuss different human genome mapping methods and gene editing tools.

Course (Paper) Name and No.: Paper-IV (Marine Biotechnology) UBT5MBI

CO1 Classify the Marine organisms with bioprospecting.

CO2 Explain applications ofMarine Biotechnology in different areas.

CO3 Apply various techniques used in seafood processing.

CO4 Construct the aqua farms, mass culture of microalgae and formulation of fish feeds.

Course (Paper) Name and No.: Paper-V (Biosafety-Applied Component) UBT5BIS

CO1 Outline the Biological hazardous agent and its management.

CO2 Explain the basic biosafety guidelines and regulations related to GMOs and LMOs.

CO3 Identify possible types of contaminants in Pharmaceutical products.

CO4 Tell the significance of recombinant DNA technology and bioethics.

Course (Paper) Name and No.: Biotechnology Practical
Cell Biology+ Medical Microbiology & Instrumentation Course Code:UBT5PR1

CO1 Estimate MIC, MLC, sensitivity, andresistance of antibiotics.

CO2 Determine Bacteriophage Titers andpresence of Covid antigen.

CO3 Explain the concepts of Cancer Geneticsand visiting Cancer Research Institute.

CO4 Identify types of Meristems, structure of anther, and stages of embryo sac development.

Course (Paper) Name and No.: Biotechnology Practical
Genomes & Molecular Biology + Marine Biotechnology Course Code:UBT5PR2

CO1 Experiment with molecular biologytechniques.

CO2 Estimate transformation efficiency

CO3 Measure amount of antioxidant, carotenoid, gelatine and collagen from marine sources

CO4 Formulate of Fish Feed from plant sourceand silage from fish waste

Course (Paper) Name and No.: Biotechnology Practical Applied Component: Biosafety Course Code:UBT5PR3

CO1 Develop a realistic approach to solve safety related issues through case studies.

CO2 Test presence of adulterants in the food

CO3 Inspect sterility of pharma- products

CO4 Estimate Vitamin B12 from bacterialsource

Class: T.Y.B. Sc. Biotechnology
Semester VI

Course (Paper) Name and No.: Paper- I Biochemistry UBT6BIC

CO1 Build the knowledge of protein structures and protein purification techniques.

CO2 Explain metabolic pathways of carbohydrates, and Cholesterol with its regulation.

CO3 Classify the Hormones Based on their mechanism of action.

CO4 Identify the disorders associated with endocrine function.

Course (Paper) Name and No.: Paper-II (Industrial Microbiology) UBT6IMI

CO1 Illustrate on production of different dairy products.

CO2 Explain the process of inoculum development with suitable examples.

CO3 Compare the different Down-stream Processing.

CO4 Summarize requirements of QA-QC along with various documentation & Audit reports.

Course Name and No.: Paper-III (Pharmacology and Neurochemistry) UBT6PNE

CO1 Illustrate the mechanisms of action of drugs on tissues vitro and in vivo.

CO2 Outline of absorption,Distribution, Metabolism and Excretion of Drugs.

CO3 Interpret different poison and toxins in regards to basic and regulatory toxicology with treatments.

CO4 Explain neuronal pathways and mechanism of propagation of nerve impulse along with associated drugs.

Course Name and No.: Paper-IV (Environmental Biotechnology) UBT6ENB

CO1 Discuss the types of energy resources and alternate fuel sources from biomass energy

CO2 Illustrate different methods used in Industrial Effluent Treatment.

CO3 Evaluate the functioning of technology involved in waste water treatment using aerobic and anaerobic methods.

CO4 Explain various treatment methods for hazardous waste management.

Course (Paper) Name and No.: Paper-V (Agri Biotechnology) UBT6ABT

CO1 Explain Greenhouse Technology, Agriculture system and Precision Agriculture/ Cultivation System

CO2 Illustrate the different biotechnological tools and techniques for crop improvement.

CO3 Select different molecular markers in plant breeding.

CO4 Make use of microbes as bio-fertilizers, PGRs and bio-pesticides.

Course (Paper) Name and No.: Practical Biochemistry + Industrial Microbiology Course Code: UBT6PR1

CO1 Assess microbiological quality of milk

CO2 Determine blood glucose and serum cholesterol

CO3 Demonstrate various protein purification techniques

CO4 Solve the problems related to hormones.

Course (Paper) Name and No.: Practical Pharmacology - Neurochemistry and Environmental Biotechnology (50M)+ Project work (50M) Course Code: UBT6PR2

CO1 Evaluate Lethal dose and lethal concentration using a suitable model.

CO2 Assess quality of industrial effluent samples by physico-chemical methods.

CO3 Develop understanding of techniques used in Effluent Treatment Plant.

CO4 Make use of techniques used in Cell biology, Biochemistry, Immunology, Microbiology and Environmental Biology.

Course (Paper) Name and No.: Practical Agri Biotechnology Course Code: UBT6PR3

CO1 Make use of microbial techniques for enrichment and isolation of soil microbes.

CO2 Measure abiotic stress tolerance in model plants.

CO3 Formulate biofertilizer and hydroponics nutrient solution for plant growth.

CO4 Summarize the facilities available in the Greenhouse plant.

Department of Computer Science

Programme Specific Outcome

PSO1 Challenging and varied subjects aligned with the current trend with the introduction of Machine Intelligence specific subjects.

PSO2 Understand Data Management Skills.

PSO3 Learn the skills of Image processing.

PSO4 Introduction of the physical world through Architecting of IoT and Wireless Sensor Networks and Mobile Communication.

PSO5 Security domain is also evolved by the introduction of Ethical Hacking, Cyber Forensic and Information and Network Security.

PSO6 Get the hands on experience Linux Server Administration and Web Services topics are included.

Course Outcomes

Class: F.Y.B. Sc. Computer Science

Semester I

Course (Paper) Name and No.: Computer Organization and Design (P I) UCS1COD

CO1	Explain the underlying principles of computers
CO2	Analyze the Instruction set architecture
CO3	Analyze the role of various hardware components of processor
CO4	Analyze how data is transferred between various peripheral devices in the computer

Course (Paper) Name and No.: Programming with Python-I (P-II) UCS1PP1

CO1	Understand the pros and cons of scripting languages vs. classical programming languages
CO2	Understand Python programming basics and paradigm
CO3	Apply loops, control statements, and string manipulations
CO4	Illustrate the use of lists, tuples & dictionaries for representing compound data

Course (Paper) Name and No.: Programming with C (P –III) UCS1PWC

CO1	Explain the basic programming concepts and broad view of programming language.
CO2	Apply programming concepts such as operators, primitive data types, and loops
CO3	Illustrate the use of an array, pointer, and file handling techniques
CO4	Demonstrate the use of strings and string handling functions
CO5	Explain the basic programming concepts and broad view of programming language.

Course (Paper) Name and No.: Database Management Systems-I UCS1DM1

CO1	Evaluate business information problem and the requirements of a problem in terms of data
CO2	Design the database schema with the use of appropriate data types for storage of data in database

CO3 Create, manipulate, query and back up the databases

CO4 Analyze various security mechanisms required for database protection

Course (Paper) Name and No.: Discrete Mathematics (P-V) UCS1DM

CO1 Explain the function, types of function and relation

CO2 Solve the problem on recurrence relation

CO3 Analyze the permutation, combination and counting principle

CO4 Examine the properties of the graph, application of graph and trees

Course (Paper) Name and No.: Descriptive Statistics UCS1DST

CO1 Understand and present data using table and graphs

CO2 Apply measures of central tendency and dispersion to draw conclusions

CO3 Apply the basic probability rules and theorem in problem-solving

CO4 Apply the method of least squares to estimate the parameters in a regression model

Course (Paper) Name and No.: Soft Skill Development (P VII) UCS1SSD

CO1 Develop Personality with the help of soft skills and hard skills

CO2 Analyze the importance of communication, etiquette, and manners

CO3 Identify the academic skills needed for employment

CO4 Develop professional skills like leadership, team building, and decision making

Course: Practical's of UCS1COD+UCS1PP1 Course Code: UCS1PPR1

CO1 Analyze the working of combinational circuits using logisim simulator

CO2 Develop assembly language programs using SPIM simulator

CO3 Develop solutions to simple computational problems using Python programs

CO4 Demonstrate programs using simple Python statements and expressions.

Course: Practical's of UCS1PWC+UCS1DM1 Course Code: UCS1PPR2

CO1	Design E-R diagram and convert it to tables
CO2	Create database and perform CRUD operation
CO3	Create user-defined data types such as structures and unions
CO4	Design a C program to implement the concept of function.

Course: Practical's of UCS1DMA+UCS1DST Course Code: UCS1PPR3

CO1	Determine properties of function, relation and recurrence relation
CO2	Solve the problems by using Pigeonhole principle, Inclusion – Exclusion Principle , Permutation and Combination
CO3	Perform various operations and apply common function to manipulate and analyse data using basic R syntax.
CO4	Visualize data attributes with functions and other statistics packages**.**

Semester II

Course: Object Oriented Programming with C++Course Code: UCS2OOP

CO1 Understand object-oriented programming and the difference between structured oriented and object-oriented programming features.

CO2 Explain use of objects and classes for developing programs.

CO3 Apply virtual and pure virtual function & complex programming situations.

CO4 Illustrate various object-oriented concepts to solve different problems.

Course (Paper) Name and No.: Programming with Python II (P-II) UCS2PP2

CO1 Demonstrate programs using simple Python statements and expressions.

CO2 Explain files, exceptions, modules and packages in Python for solving problems.

CO3 To develop the skill of designing Graphical user Interfaces in Python.

CO4 Explain the concepts of file handling, exception handling and database connectivity.

Course (Paper) Name and No.: Linux (P-III) UCS2LIN

CO1 Explain the Importance of Linux in Software Ecosystem and Architecture of Linux.

CO2 Apply various command line utilities.

CO3 Design Network using IP address, DNS and different network protocols.

CO4 Apply System Administrative task on network.

Course (Paper) Name and No.: Data Structure (P-IV) UCS2DST

CO1 Describe data structures and different abstract data types

CO2 Apply implementation of linked structures

CO3 Differentiate linear probing, rehashing and clustering

CO4 Evaluate different implantations of tree traversals like binary tree, heap and search trees

Course: Calculus Course Code: Calculus (V) UCS2CAL

CO1	Recall the limit, continuity and derivative of a function
CO2	Explain the properties and application of derivatives
CO3	Examine the properties and application of integration
CO4	Define partial derivatives and application of derivatives

Course: Statistical Methods and Testing of Hypothesis Course Code: (VI) UCS2SMH

CO1	Illustrate different probability functions with respect to discrete and continuous random variables.
CO2	Determine the hypotheses and validate using appropriate statistical tests
CO3	Recognize when analysis of variance (ANOVA) is appropriate and be able to perform one-way and two-way ANOVAs.
CO4	Comparison of parametric and nonparametric tests and identification of applications where nonparametric approaches are appropriate.

Course: Digital Marketing Course Code: UCS2DIM

CO1	Explain use of Digital Media in Marketing.
CO2	Aware about cyber laws related to digital marketing
CO3	Explain benefits of digital marketing over traditional marketing
CO4	Summarize various tools of social media and Digital Marketing

Course: Practical's of UCS2OOP+UCS2PP2 Course Code: UCS2PPR1

CO1	Develop Programs using OOP
CO2	Develop Simple Applications
CO3	Create Graphical User Interface
CO4	Create database using python programming

Course: Practical's of UCS2LIN+UCS2DST Course Code: UCS2PPR2

CO1 Demonstrate installation of Linux distribution (Ubuntu, fedora, debian) using various modes.

CO2 Explain security of linux , command line interface , graphical user interface.

CO3 Design implementation of different linked structures with the help of data structures and ADTs

CO4 Evaluate different sorting algorithms and its time complexities

Course: Practical's of UCS2CAL+UCS2SMH Course Code: UCS2PPR3

CO1 Analyse and manipulate data with in-build functions for hypothesis testing.

CO2 Evaluate partial derivatives, directional derivatives

CO3 Find the solution by using Newton's Method , Euler's Method , first order first degree differential equation

CO4 Examine Maxima and minima of functions , partial derivatives of a functions

Class: S.Y.B. Sc. Computer Science

Semester III

Course (Paper) Name and No.: Theory of Computation (P-I) UCS3TOC

CO1 Summarize the mathematical concepts of theoretical computer science

CO2 Build abstract machines using associated languages and grammars

CO3 Apply rigorous formal mathematical methods to prove properties of languages, grammars, and automata

CO4 Evaluate solvable and unsolvable problems

Course (Paper) Name and No.: Core Java (P-II) UCS3CJV

CO1 Design java-based applications using Object-oriented features

CO2 Demonstrate the use of predefined and customizable packages for real-time applications

CO3 Explain the concepts of Wrapper classes, Collections, and Inner classes

CO4 Explain the concepts of File, Exception handling and Networking

Course (Paper) Name and No.: Operating System (P-III) UCS3OPS

CO1 Describe the fundamental structure of an operating system

CO2 Utilize operating system algorithms such as CPU scheduling, Process, and Deadlock

CO3 Analyze the behavior of the operating system in terms of process synchronization and coordination.

CO4 Illustrate the concept of file and memory management of an operating system

Course (Paper) Name and No.: Database Management System (P-IV) UCS3DMS

CO1 Describe the principles of database management systems.

CO2 Identify different storage and recovery techniques used in database systems.

CO3 Apply crash recovery and transaction management techniques on database

CO4 Build a PL/SQL program that will handle data manipulation operations using Oracle databases

Course (Paper) Name and No.: Combinatorics and Graph Theory (P-V) UCS3CGT

CO1 Utilize combination, permutation, and enumeration techniques to solve counting problems

CO2 Apply the basic concepts of graph theory, such as Eulerian trails, Hamiltonian cycles, bipartite graphs, and planar graphs

CO3 Evaluate real-time problems using the concept of graph theory.

CO4 Choose different strategies to find out the optimal solution.

Course (Paper) Name and No.: Physical Computing and IOT Programming (P VI) UCS3IOT

CO1 Analyze System on Chip Architectures

CO2 Explain the preparation of Raspberry Pi hardware and installation

CO3 Apply Linux commands to configure Raspberry Pi

CO4 Demonstrate the use of predefined raspberry pi interfaces for real-time applications

Course (Paper) Name and No.: Skill Enhancement: Web Programming (P-VII) UCS3WBP

CO1 Design valid, and meaningful web pages using emerging technologies.

CO2 Develop client-side and server-side web applications using scripting language

CO3 Develop database-driven web-based applications

CO4 Create web-based applications using XML

Course: Practical of UCS3CJV+UCS3OPS + UCS3DMS Course Code: UCS3PR1

CO1 Develop a client-server application using multithreading, and networking

CO2 Create a graphical user interface using Abstract Windowing Toolkit

CO3 Evaluate the working of operating system algorithms using java technology

CO4 Build PL/SQL code block for data validation and transaction management of database

Course: Practical of UCS3CJV+UCS3OPS + UCS3DMS Course Code: UCS3PR1

CO1 Apply Dijkstra's algorithm to find the shortest path in the graph.

CO2 Demonstrate the use of Ford Fulkerson algorithm to find out maximum flow in a Network

CO3 Create IoT-based projects using Raspberry Pi

CO4 Develop static web pages using HTML, CSS, and JavaScript

Semester IV

Course (Paper) Name and No.: Fundamentals of Algorithm (P-I) UCS4FOA

CO1 Understand concepts of algorithms to design efficient program

CO2 Formulate problems as an algorithmic problem with optimize solution

CO3 Apply types of Data Structures to real world problem

CO4 Analyze algorithms for Time and Space Complexity.

Course (Paper) Name and No.: Advanced Java (P-II) UCS4AJV

CO1 Explain the concepts of J2EE architecture and MVC Architecture along with struts framework.

CO2 Design dynamic web applications using java database connectivity and server side technologies.

CO3 Understand and explore use of java server programming

CO4 Design java application using JavaBeanS and JSON

Course (Paper) Name and No.: Computer Network (P III) UCS4CNT

CO1 Explain the concepts of networking

CO2 Analyze IP addressing and its role in networking

CO3 Analyze the role of each layer in the network model

CO4 Outline the role of protocols provided by each layer of network model

Course (Paper) Name and No.: Software Engineering, Paper IV UCS4SEN

CO1 Illustrate the different phases of Software development life cycle

CO2 Apply software testing and quality assurance concepts while developing software

CO3 Design and develop software requirement specification documents using OOAD

CO4 Understand software measurement and metrices

Course (Paper) Name and No.: Linear Algebra using Python (V) UCS4LAP

CO1 Develop a computational thinking using mathematical solutions

CO2 Apply linear algebra concepts with help of NumPy and matplotlib libraries of python

CO3 Understand span, linear independence, basis, and dimension, and apply these concepts to various vector spaces and subspaces.

CO4 Relate the concepts of linear algebra in the field of computer science

Course (Paper) Name and No.: .NET Technologies (P-VI) UCS4NET

CO1 Understand the .NET framework

CO2 Develop a proficiency in the C# programming language

CO3 Proficiently develop ASP.NET web applications using C#

CO4 Use ADO.NET for data persistence in a web application

Course (Paper) Name and No.: Skill Enhancement: Android Developer Fundamentals (PVII) UCS4ADF

CO1 Demonstrate the Understanding of fundamental of Android Programming.

CO2 Sketch attractive Interfaces by using layouts and controls.

CO3 Develop Android applications by using Java programming language

CO4 Demonstrate programming skills for managing tasks on mobile platform

Course: Practical of UCS4FOA+UCS4AJV + UCS4CNT Course Code: UCS4PR1

CO1 Develop Programs using python with help of searching, sorting and traversing methods of algorithms

CO2 Design dynamic web Applications using Servlets and JSP

CO3 Develop Swing-based Graphical user Interface

CO4 Apply the networking commands in order to troubleshoot network problems and analyze the network with the help of the networking analyzer tool

Course: Practical of UCS4LAP+ UCS4NET + UCS4ADF Course Code: UCS4PR2

CO1	Design and develop C# programs using core concepts
CO2	Design Server side ASP.NET Pages using server control , web control , rich control, and Ajax
CO3	Evaluate the concepts of metrics using python
CO4	Design and develop mobile applications on Android Platform

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Semester V

Course (Paper) Name and No.: Artificial Intelligence (Elective-I-P-I) UCS5AIN

CO1 Explain the concepts, techniques and building blocks of AI

CO2 Apply different AI strategies for problem-solving, inference, vision, knowledge representation, and learning

CO3 Design and develop various applications of AI techniques in Intelligent agent, and Expert system

CO4 Compare different reinforcement learning approaches

Course (Paper) Name and No.: Linux Server Administration UCS5LSA(Elective-I-P-II)

CO1 Demonstrate the installation of Linux server

CO2 Demonstrate the role and responsibilities of a Linux system administrator

CO3 Develop and maintain Linux-based system

CO4 Apply appropriate service on Linux server as per requirement

Course (Paper) Name and No.: Software Testing and Quality Assurance UCS5SQA (Elective-I-P-III)

CO1 Understand the principles and practices of cryptographic techniques.

CO2 Understand a variety of generic security threats and vulnerabilities.

CO3 Understand various protocols for network security to protect against the threats in a network

CO4 Identify & analyze particular security problems for a given application and actual implementation using practical.

Course (Paper) Name and No.: Information and Network Security UCS5INS (Elective-II-P-I)

CO1	Identify generic security threats and vulnerabilities
CO2	Analyze information and network security Problems
CO3	Assess and Apply various cryptographic techniques
CO4	Implement security solutions for confidentiality, authentication, and privacy

Course (Paper) Name and No.: Architecting of IoT UCS5IOT (Elective-II-P-II)

CO1	Design & develop IoT Devices
CO2	Evaluate various IOT data link layer protocols
CO3	Evaluate various IOT Network layer protocols
CO4	Demonstrate the working of sensors, Actuators

Course (Paper) Name and No.: Web Service UCS5WEB (Elective-II-P-III)

CO1	Describe the web service specification standards and the primitives of Service Oriented Architecture
CO2	Create web services using core components of the framework
CO3	Examine the principles and applications of SOAP-based and REST-based web services
CO4	Develop secure and quality-based web services

Course (Paper) Name and No.: Skill Enhancement Game Programming Course Code: UCS5GPG

CO1	Apply geometric concepts for the preparation of animation clips
CO2	Demonstrate the use of DirectX graphical engine
CO3	Describe the architecture of Graphical Processing Unit
CO4	Differentiate Augmented, Virtual, and Mixed Reality techniques

Course: Practical of Elective-I Course Code: UCS5PR1

CO1	Apply informed and uninformed searching techniques to find out an optimum path for the given problem
CO2	Create a decision tree for classification of data set
CO3	Apply Selenium automation tool for testing web-based application and quality assurance
CO4	Illustrate configuration of different types linux server

Course: Practical of Elective-II Course Code: UCS6PR2

CO1	Design and Develop Cryptographic technique for security of information.
CO2	Develop IOT-based project with the help of various IOT interfaces
CO3	Design SOAP-based and REST-based web services.
CO4	Build a web service using WCF.

Course: Project Implementation Course Code: UCS5PRJ

CO1	Design and develop computer-based software for current and advanced trends
CO2	Demonstrate communication and technical skills

Course: Practical of Skill Enhancement Course Code: UCS5PR3

CO1	Develop 2D and 3D Android and web-based game
CO2	Develop Animator Controller using Unity

Semester VI

Course (Paper) Name and No.: Cloud Computing (Elective-I P-I) UCS6CLC

CO1 Explain delivery models of cloud computing architecture

CO2 Describe the functions of a virtual data centre and cloud computing

CO3 Analyse the Software as a Service in cloud computing

CO4 Apply cloud computing frameworks in different environment

Course (Paper) Name and No.: Cyber Forensics (Elective-I P-II) UCS5CRF

CO1 Plan and Prepare all stages of an investigation to collect evidences

CO2 Analyse information gathered and report them in the form of document to present in the court

CO3 Analyse legal aspect and Ethics in cyber forensics

CO4 Evaluate real time case study in cyber forensics

Course (Paper) Name and No.: Wireless Sensor Network and mobile communication (Elective-I-P-III) USCS601

CO1 Demonstrate the functioning of wireless communication system and standards

CO2 Explain multiple access techniques for Wireless Communication

CO3 Understand various applications of wireless network

CO4 Design and implementation of wireless sensors

Course (Paper) Name and No.: Information Retrieval (Elective-II-P-I) UCS6INR

CO1 Describe the field of Information retrieval and its relationship to search engines

CO2 Compare different types of link analysis and specialized search methods.

CO3 Examine the different retrieval metrics for evaluating information retrieval.

CO4 Analyse various search engine optimization techniques.

Course (Paper) Name and No.: Digital Image Processing (Elective-II-P-II) UCS6DIP

CO1 Describe the fundamental concepts of a digital image processing system.

CO2 Analyse the images in the frequency domain using various transforms.

CO3 Evaluate image enhancement techniques.

CO4 Apply various compression and segmentation techniques.

Course (Paper) Name and No.: Data Science (Elective-II-P-III) UCS6DSC

CO1 Describe the concept of data, information and knowledge

CO2 Apply different data mining techniques to real world business problems and interpret results using data visualization techniques

CO3 Analyse ethical issues related to data security and privacy in business

CO4 Develop data mining models

Course (Paper) Name and No.: Skill Enhancement Ethical Hacking UCS6ETH

CO1 Identify different phases of an attack

CO2 Demonstrate security, vulnerabilities and weakness in target application

CO3 Identify legal and ethical issues related to vulnerability and penetration testing.

CO4 Test and exploit system using various tools and understand impact of hacking and real time machines

Course: Practical of Elective-I Course Code: UCS6PR1

CO1 Demonstrate the use of Software as a Service and Infrastructure as a Service

CO2 Construct a virtual environment using VM ware or Virtual Box

CO3 Test and Analyze Evidences of crime

CO4 Demonstrate Data Back-up and Data Recovery

Course: Practical of Elective-II Course Code: UCS6PR2

CO1	Test the different types of search engine algorithms and techniques.
CO2	Analyse Hadoop framework and the working of Map Reduce.
CO3	Apply Linear regression method to the dataset
CO4	Test different types of retrieval methods of NoSQL database
CO5	Calculate different types of transforms for the given 2D matrix and Apply various techniques of image compression and enhancement

Course: Project Implementation Course Code: UCS5PRJ

CO1	Design and develop computer-based software for current and advanced trends
CO2	Demonstrate communication and technical skills

Course: Practical of Skill Enhancement Course Code: UCS6PR3

CO1	Apply techniques to secure information from malicious attack
CO2	Demonstrate the exploitation of Windows7 using Kali Linux

Department of Information Technology

Programme Specific Outcome

PSO1 Learners are able to work effectively in IT industries in field of project management.

PSO2 Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks. Able to understand building blocks of Internet of Things and characteristics.

PSO3 Learners are able to configure different types of servers on Linux Platform.

PSO4 Learners are able to create application projects using different technologies such as enterprise java and .Net.

PSO5 Learners are able to build and enhance business intelligence capabilities by adapting the appropriate technology and software solutions.

Course Outcomes

Class: F.Y.B. Sc. Information Technology

Semester I

Course (Paper) Name and No.: Introduction to C++ Programming Course Code: UIT1ICP

CO1 Define basic C++ programming concepts.

CO2 Elaborate concepts of functions in C++.

CO3 Explain derived data types such as Arrays and Pointers.

CO4 Determine different string functions and concepts of structures.

Course (Paper) Name and No.: Digital Electronics (P-II) UIT1DEL

CO1 Define the various types of number systems & conversions.

CO2 Explain the various types of logic gates along with the truth tables.

CO3 Distinguish combinational and sequential logic circuits.

CO4 Classify different types of flip- flops, registers and counters.

Course (Paper) Name and No.: Operating Systems (P-III) UIT1OST

CO1 Explain the importance of Computer Systems, Process Management Policies.

CO2 Define the memory management and its allocation policies.

CO3 Elaborate the file systems, it's structure and operations.

CO4 Determine the requirement for process synchronization and coordination handled by the operating system.

Course (Paper) Name and No.: Discrete Mathematics (P-IV) UIT1DMS

CO1 Explain set theory definitions, logic form and quantified statements.

CO2 Evaluate the recurrence relations, functions, probability, combinations as well as the mathematical induction.

CO3 Evaluate the shortest path of trees and the minimum spanning trees using algorithms.

CO4 Prove examples on direct proofs, divisibility, quotient- remainder theorem and indirect argument.

Course (Paper) Name and No.: Communication Skills (P-V) UIT1CST

CO1 Make use of the basics of Business communication.

CO2 Elaborate examples on how to write business messages appropriately and propose the views in meetings and group discussions

CO3 Develop Communication skills in different fields or departments.

CO4 Design presentation skills

Course: Introduction to C++ Programming Practical Course Code: UIT1CPP

CO1 Develop Simple C++ Programs.

CO2 Construct C++ programs using conditional statements and loops.

CO3 Make use of functions in C++ programs.

CO4 Build C++ Programs using Arrays.

Course: Digital Electronics Practical Course Code: UIT1DEP

CO1 Classify logic gates and their ICs and universal gates.

CO2 Simplify the given Boolean expressions using a minimum number of logic gates and ICs.

CO3 Build combinational circuits and code converters.

CO4 Design Encoder, Decoder, Multiplexer and Demultiplexer

Course: Operating Systems Practical Course Code: UIT1OSP

CO1 Build virtual operating system.

CO2 Demonstrate linux commands.

CO3 Make use of utilities of windows and linux.

CO4 Choose windows commands.

Course: Discrete Mathematics Practical Course Code: UIT1DMP

CO1 Make use of the basic commands of scilab.

CO2	Construct a formula for recurrence relation, counting and probability using scilab.
CO3	Analyze the concept of properties of integers and operations using scilab.
CO4	Estimate the paths in graph theory, adjacency matrix and basic definitions in Boolean algebra using scilab.

Course: Communication skills Practical Course Code: UIT1PCP

CO1	Develop pronunciation skills, listening skills, writing skills
CO2	Construct storytelling, advertising, role plays and situational conversations
CO3	Take part in interviews and group discussions
CO4	Build presentations

Course: Environmental Studies Course Code: USC1EVS

CO1	Describe Environment
CO2	Predict the consequences of human activities on the web of life
CO3	Extend the values and responsibilities in solving current environmental problems and avoid future destruction

Semester II

Course (Paper) Name and No.: Object oriented Programming (P-I) UIT2OPT

CO1 Explain characteristics of object oriented programming approach with C++

CO2 Make use of operators in C++ .

CO3 Evaluate the concept of Template, Strings, Streams

CO4 Utilize different file handling features

Course (Paper) Name and No.: Microprocessor Architecture (P-II) UIT2MAT

CO1 Explain Microprocessor, Microcomputer and Assembly Language.

CO2 Elaborate the concepts of Microprocessor Architecture, Interface Devices and Assembly Language.

CO3 Make use of additional Assembly Language Programming techniques, Stack and Subroutines.

CO4 Formulate code conversion, BCD Arithmetic and Software Development Systems and Interrupt.

Course (Paper) Name and No.: Database Management System (P-III) UIT2DMS

CO1 Design E-R model to represent database

CO2 Design the database with normalization

CO3 Explain the fundamental of RDBMS

CO4 Explain the transactions of database and basic of PL/SQL

Course (Paper) Name and No.: Numerical Methods (P-IV) UIT2NMS

CO1 Solve algebraic, transcendental and simultaneous systems of equations using numerical methods.

CO2 Evaluate the functions and their derivatives using interpolation.

CO3 Estimate the numerical solution of differential equations and integration.

CO4 Estimate the characteristics value using power method and solutions to linear systems of equations using direct methods.

Course (Paper) Name and No.: Web Programming (P-V) UIT2WPT

CO1 Illustrate the HTML5 tags used to develop static web pages.

CO2 Make use of CSS to improve the look and feel of web pages.

CO3 Elaborate the creation of dynamic web pages using server side PHP programming and Database connectivity.

CO4 Explain javascript event handling and functions.

Course: Object Oriented Programming Practical Course Code:UIT2OPP

CO1 Construct program using classes, constructors, inheritance

CO2 Design programs using virtual functions and abstract classes

CO3 Build program using operator overloading.

CO4 Utilize private function, friend function.

Course: Microprocessor Architecture Practical Course Code:UIT2MAP

CO1 Create simple Assembly Language Programs.

CO2 Evaluate operations on memory locations.

CO3 Develop packing and Unpacking operations.

CO4 Make use of register operations.

Course: Database Management System Practical Course Code:UIT2DSP

CO1 Build Basic Database

CO2 Build SQL statement

CO3 Modify E-R model to relational table

CO4 Construct integrity constraints

Course: Numerical methods Practical Course Code: UIT2NMP

CO1 Make use of the basic commands of scilab.

CO2 Construct a formula for interpolation using scilab.

CO3	Determine the differential equation and numerical integration using scilab.
CO4	Design the program in scilab for Eigenvalue problems and linear systems of equations.

Course: Web Programming Practical Course Code: UIT2WPP

CO1	Create static web pages using HTML5 and CSS.
CO2	Design a responsive website using HTML5 and CSS.
CO3	Construct interactive web pages using javascript as client side scripting language.
CO4	Develop dynamic web pages using PHP as server side scripting language.

Course: Effective Communication Skills Course Code: USC2CSK

CO1	Develop an understanding of communication skills to face challenges of real and corporate life
CO2	Show enhancement in communication skill
CO3	Demonstrate Leadership qualities, team-work, decision making

Class: S.Y.B. Sc. Information Technology

Semester III

Course (Paper) Name and No.: Python Programming (P-I) UIT3PYP

CO1 Explain the basic principles of the python programming language.

CO2 Create the python programs in functions, string, file handling & exception handling.

CO3 Explain facts of object-oriented concepts & modules.

CO4 Design GUI & Database applications.

Course (Paper) Name and No.: Data Structures (P-II) UIT3DST

CO1 Define the basics of algorithm analysis and array operations.

CO2 Elaborate Operations on Linked lists, Stack and Queue.

CO3 Explain Different searching and sorting techniques, tree and AVL tree structures.

CO4 Solve Problems based on graph and hashing techniques.

Course (Paper) Name and No.: Computer Networks (P-III) UIT3CNT

CO1 Explain the functions of each layer in OSI & TCP/IP model.

CO2 Elaborate functions of data link layer & its protocols.

CO3 Define the concepts of Network layer routing protocols and IP addressing

CO4 Explain the working of different transport layer protocols.

Course (Paper) Name and No.: Advanced SQL (P-IV) UIT3DMS

CO1 Define different database objects to access oracle database

CO2 Elaborate the DDL and DML database statements and associated naming rules.

CO3 Explain database objects, users and grant privileges

CO4 Explain advanced database objects required for PL/SQL programs

Course (Paper) Name and No.: Applied Mathematics (P-V) UIT3MAT

CO1 Evaluate matrices using different methods and polar, exponential forms of complex as well as hyperbolic functions.

CO2 Analyze different solutions of the differential equation using various methods and differential equations with constant coefficients.

CO3 Explain the properties and theorems of laplace and integrate the laplace transform and evaluate differential equations using laplace transform.

CO4 Analyze double and triple integrals in polar coordinates and area, volume using double and triple integrals

Course: Python Programming Practical Course Code: UIT3PPP

CO1 Create programs of objects, strings, arrays, functions, etc.

CO2 Solve programming errors using exception handling

CO3 Construct the concepts of OOP like class, inheritance, polymorphism, encapsulation etc.

CO4 Design the GUI using database applications.

Course: Data Structures Practical Course Code:UIT3DSP

CO1 Develop different data structure techniques.

CO2 Create Linked list, Stack and Queue Operations.

CO3 Make use of searching and sorting techniques

CO4 Build a tree and display its elements

Course: Computer Networks Practical Course Code: UIT3CNP

CO1 Determine information about IP address.

CO2 Apply network commands for network configuration.

CO3 Utilize IP routing using routing techniques.

CO4 Make use of wireshark tool for IP packet scanning.

Course: Advanced SQL Practical Course Code: UIT3DMP

CO1	Apply DDL and DML statements to access database
CO2	Create database objects using SET operators
CO3	Build basic PL/SQL programs
CO4	Develop PL/SQL program using advanced database objects

Course: Mobile Programming Practical Course Code: UIT3MPP

CO1	Build a simple basic program using cordova commands.
CO2	Create an application using battery plugin and camera plugin.
CO3	Develop an application using contacts plugin, device plugin and accelerometer plugin.
CO4	Make use of Network Information plugin, splash screen plugin and vibration plugin.

Semester IV

Course (Paper) Name and No.: Core Java (P-I) UIT4CJT

CO1	Explain the basic concepts and terminologies of java programming.
CO2	Build java code using control structure iteration
CO3	Explain advanced class features.
CO4	Elaborate multithreading, IO file handling, exception handling and AWT application

Course (Paper) Name and No.: Introduction to Embedded System (P-II) UIT4EMB

CO1	Define the core components of embedded systems.
CO2	Explain the types of memory and embedded peripherals.
CO3	Make use of 8051 instruction sets.
CO4	Classify different types of operating systems and their characteristics.

Course (Paper) Name and No.: Computer Oriented Statistical Techniques (P III) UIT4COS

CO1	Apply discrete and continuous probability distribution to various problems.
CO2	Analyze the hypothesis as well as calculate confidence interval and the p-concept.
CO3	Apply Chi-square test for independence as well as goodness of fit.
CO4	Estimate bivariate and multivariate regression and correlation analysis and to construct ANOVA.

Course (Paper) Name and No.: Software Engineering (P-IV) UIT4SWE

CO1	Explain software life cycle model and knowledge about different phases of software life cycle.
CO2	Make use of different methodologies in software engineering.
CO3	Explain current theories, models and techniques that provide a basis for the software life cycle.
CO4	Elaborate techniques and tools necessary for engineering practice.

Course (Paper) Name and No.: Computer Graphics and Animation (PV) UIT4CGA

CO1 Classify various 2D & 3D transformations.

CO2 Define the basic computer graphics applications.

CO3 Explain algorithms of visible surface detection.

CO4 Explain principles of animation.

Course: Core Java Practical Course Code: UIT4CJP

CO1 Build basic programs by using operators

CO2 Make use of the data types, methods and constructors to write java program

CO3 Create a program on inheritance, vectors, multithreading and file handling concepts

CO4 Design GUI by using Exception handling

Course: Embedded System Practical Course Code:UIT4ESP

CO1 Design a reprogrammable embedded computer using 8051 microcontroller.

CO2 Develop a program to generate given time delay by using timer control registers.

CO3 Make use of components like seven-segment display, Oscilloscope and Stepper motor.

CO4 Create a program to generate traffic signals

Course: Computer Oriented Statistical Techniques (Practical) Course Code:UIT4COP

CO1 Illustrate basic commands and basic operations of the R tool.

CO2 Make use of R tool commands to calculate summary statistics

CO3 Evaluate testing of hypothesis estimate probability distribution using R tool

CO4 Develop the R programme to infer statistical analysis

Course: Software Engineering Practical Course Code: UIT4SEP

CO1 Evaluate products-startups implementing software process models in software engineering methods.

CO2	Design the diagram in an open-source tool: Star UML.
CO3	Construct systems using design principles.
CO4	Design the existing software using UML diagrams.

Course: Computer Graphics and Animation Practical Course Code: UIT4CGP

CO1	Make use of the graphic functions
CO2	Create 2D, 3D animation.
CO3	Apply line drawing, circle generation algorithm.
CO4	Design program for circle using flood fill, boundary fill algorithm.

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Semester V

Course (Paper) Name and No.: Software Project Management (P-I) UIT5SPM

CO1	Define software project management and project planning
CO2	Explain risk management and resource allocation
CO3	Determine the cost of project based on project duration
CO4	Elaborate the quality of leadership skills

Course (Paper) Name and No.: Internet of Things (P-II) UIT5IOT

CO1	Explain Design Principles for Connected Devices
CO2	Elaborate the concepts of Prototyping Embedded Devices , its Physical Design and Online Components
CO3	Classify types of designing 3D modules.
CO4	Explain the Market perspective and Ethical concept of IOT.

Course (Paper) Name and No.: Advanced Web Programming (P-III) UIT5AWP

CO1	Explain the basic components concept of C# .NET framework language along with .NET framework.
CO2	Elaborate advanced web concept in ASP.NET.
CO3	Explain dynamic web page using ADO.NET fundamentals.
CO4	Make use of AJAX and XML programming skills in ASP.NET

Course (Paper) Name and No.: Linux System Administration (P-IV) UIT5LSA

CO1	Explain various commands to manage system level processes and handle software management on linux platforms.
CO2	Elaborate storage and user management on linux platforms.
CO3	Explain the detailed steps and files for configuration of different types of servers.
CO4	Make use of shell level programming in linux.

Course (Paper) Name and No.: Enterprise Java (P-V) UIT5ENJ

CO1	Explain servlet with java applications and database connectivity.
CO2	Elaborate the fundamentals and core concepts of cookies, session, file uploading, file downloading and request dispatcher, EJB applications and JNDI.
CO3	Explain JSP applications using JSTL.
CO4	Make use of knowledge of applications using concepts of persistence, object/relational mapping, JPA and Hibernate.

Course: Project Dissertation Course Code: UIT5PDP

CO1	Identify a problem definition
CO2	Estimate system requirement
CO3	Design data flow diagram
CO4	Plan the system design phase in SDLC

Course: Internet of Things Practical Course Code: UIT5ITP

CO1	Make use of Raspberry pi to display LED pattern,Time over 4-digit 7-segment and control whatsapp.
CO2	Build the interfacing of Raspberry pi with Oscilloscope,Fingerprint sensor,GPS Module
CO3	Create basic Home Automation using Raspberry Pi
CO4	Construct an application to monitor visitor using Raspberry Pi and Pi Camera.

Course Advanced Web Programming Practical Course Code: UIT5WPP

CO1	Build console application in C#.
CO2	Develop web applications with strong object-oriented principles.
CO3	Develop connection between web pages using ASP.NET AJAX.
CO4	Develop dynamic web pages in ASP.NET and XML

Course: Linux System Administration Practical Course Code: UIT5LAP

CO1	Make use of administrative level commands for user and storage management and Networking.
CO2	Construct the firewall rules for securing server with iptables and setup cryptographic services on linux machine.
CO3	Create the configuration for different types of servers.
CO4	Develop shell scripting programs on linux platform.

Course: Enterprise Java Practical Course Code: UIT5EJP

CO1	Create applications using servlet with cookies and session.
CO2	Develop the servlet IO, file applications and JSP applications.
CO3	Construct JSP, JSTL, EL and EJB applications
CO4	Build the EJB applications with different types of beans and JPA applications.

Semester VI

Course (Paper) Name and No.: Software Quality Assurance (P-I) UIT6SQA

CO1 Define quality of software project

CO2 Explain testing and different testing method

CO3 Elaborate software verification, validation and v test model

CO4 Classify level of testing

Course (Paper) Name and No.: Security in Computing (P-II) UIT6SCP

CO1 Evaluate and contrast computing security issues.

CO2 Explain computing security vulnerabilities and threats

CO3 Determine alternative countermeasures and controls

CO4 Classify virtual machines & cloud computing.

Course (Paper) Name and No.: Business Intelligence (P-III) UIT6BUI

CO1 Explain the framework of the computerized Business Intelligence System and decision support system.

CO2 Analyze data by choosing relevant models and algorithms for respective applications.

CO3 Explain Classification and clustering algorithms

CO4 Elaborate the applications of Business Intelligence.

Course (Paper) Name and No.:Principles of Geographic Information Systems (P-IV) USIT6GIS

CO1 Define Importance of GIS and its use in representation of the real world.

CO2 Explain data capture, storage, analysis, and output in a GIS.

CO3 Elaborate Map scale, projection and coordinate systems in GIS.

CO4 Explain Spatial data analysis and Data visualization.

Course (Paper) Name and No.: IT Service Management (P-V) UIT6ISM

CO1 Define basic concepts of IT Service management and service life cycle.

CO2 Explain Service Strategy, Service Design and its Principles.

CO3 Elaborate Service Transition and Service Operation in detail.

CO4 Explain CSI Model and Responsibility Model for Continual Service Improvement.

Course: Project Implementation Course Code: UIT6PIP

CO1 Design user interface for input

CO2 Develop coding for the system

CO3 Examine various system testing.

CO4 Predict the future scope of project

Course: Security in Computing Practical Course Code: UIT6SCP

CO1 Design Routers by OSPF, NTP, SSH

CO2 Create AAA Authentication

CO3 Apply and Verify Extended Numbered ACL

CO4 Test IPV6 by using firewalls & ACL

Course: Business Intelligence Practical Course Code: UIT6BIP

CO1 Import legacy data from different sources and apply ETL process on it

CO2 Apply classification and clustering algorithms

CO3 Apply linear and logistic regression algorithms

CO4 Examine what-if-analysis for data visualization

Course: Principles of Geographic Information Systems Practical Course Code: USIT6GIP

CO1 Utilize QGIS software for managing vector and raster data.

CO2 Build maps with attributes and different data sets.

CO3	Design georeferencing for maps.
CO4	Make Use of advanced GIS operations like Nearest Neighborhood analysis, automating map creation etc.

Course: Android Mobile Programming Practical Course Code: UIT6P6AMP

CO1	Build simple Android Applications.
CO2	Apply different resources and layouts in Android Programming.
CO3	Design Android applications using UI elements.
CO4	Develop applications based on Media, Telephone, Security and Permissions.

Department of Zoology

Programme Specific Outcomes

PSO1 Gain the comprehensive knowledge and understanding of major concepts, theoretical principles and experimental findings in Zoology and its different subfields.

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

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

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

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

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

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

Course Outcomes

Class: F.Y.B. Sc. Zoology

Semester I

Course (Paper) Name and No.: Kingdom Animalia, Wonders of Animal World, Biodiversity and its Conservation (USC1ZO1)

CO1 To know about basic of systematic and the hierarchy in the animal world.

CO2 Understand the basic level of biodiversity

CO3 Classify different phyla with their respective examples and its economic importance.

CO4 Explain the concept of biodiversity hotspot and values of biodiversity.

Course (Paper) Name- Laboratory safety units and measurement, Instrumentation and Animal biotechnology (USC1ZO2)

CO1 Apply basic laboratory safety practices.

CO2 Operate suitable instruments for the studies of different components of Zoology.

CO3 Understand the recent advances in the Zoology with reference to biotechnology

CO4 Explain the basic principle and working of instruments used in Zoology laboratory.

Practical – I

CO1 Understand the level of organization in animal kingdom with reference to symmetry, segmentation and cephalization.

CO2 Classify different species of animals from protozoa to Echinodermata.

CO3 Describe different types of animal interaction.

CO4 Mount and identify the foraminiferan shell.

Practical – II

CO1 Identification of the safety symbols.

CO2 Describe the applications of various techniques in Zoology with reference to animal biotechnology.

CO3 Understand the purpose of various techniques and its proper use.

CO4 Employ the techniques for separation of amino acids, lipids and pigments.

Semester II

Course (Paper) Name and No.: Kingdom Animalia Part-II, Ecosystem, National Park and Sanctuaries (USC2ZO1)

CO1 Classify the subphylum with their respective examples from chordates.

CO2 Recall the concept of interdependence and interaction of physical, chemical and biological factors in the environment.

CO3 Relate the career options in the field of wild life conservation, research, photography and ecotourism.

CO4 Discover the field of ecotourism and wildlife management.

Course (Paper) Name: Nutrition, Public Health and Hygiene [USC2ZO2]

CO1 Understand healthy dietary habits in order to prevent risk of developing health hazards.

CO2 Explain parasites and its effect on human health.

CO3 Recognize stress related problems

CO4 Cite the cause, symptoms and precautions of infectious diseases.

Practical – I

CO1 Identify different species of animals from phylum chordate

CO2 Prepare slide of scales of cartilaginous fishes and Bony fishes

CO3 Construct the different ecological pyramid

CO4 Identify the species based on adaptive radiation in reptiles and venomous and non-venomous snakes.

Practical – II

CO1 Employ the process of estimation of vitamin C and protein.

CO2 Examine the presence of adulterants in milk, milk products and different food products.

CO3 Identify different human parasites.

CO4 Illustrate BMI analysis.

Class: S.Y.B. Sc. Zoology

Semester III

Course (Paper) Name and No.: Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids (USZO301)

CO1 Describe the structure of chromosomes and its types and mechanisms of sex determination.

CO2 Differentiate the autosomes and sex chromosomes, euchromatin and heterochromatin.

CO3 Apply the principles of inheritance to study heredity

CO4 Analyze the Pedigree chart

Course (Paper) Name and No.: Study of Nutrition and Excretion, Respiration and circulation, Control and coordination, Locomotion and Reproduction (USZO302)

CO1 Recognize the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy and correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.

CO2 Explain the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy and correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.

CO3 Analyze the cause and effect of alterations in chromosome number and structure.

CO4 Compare the process of control and coordination by nervous and endocrine regulation.

Course (Paper) Name: Developmental Biology, Ethology, Parasitology (USZO303)

CO1 Develop critical understanding relates with single cell fertilized egg become embryo

CO2 Compare different developmental stages.

CO3 State different types of animal behavior.

CO4 Describe the life cycle of specific parasites, the symptoms of the disease & its treatment.

Practical I

CO1 Extract and detect DNA and RNA

CO2 Explain Chromosome morphology and Polytene chromosome

CO3 Predict blood groups and Rh factor.

CO4 Solve the Problems in genetics and molecular biology

Practical II

CO1 Analyze of normal and abnormal constituents of Urine

CO2 Compare nutritional Apparatus, respiratory structures, locomotory organs, types of hearts

CO3 Test ammonia in water excreted by fish and uric acid from excreta of Birds

CO4 Prepare the field visit report on vermicomposting unit or wild life sanctuaries

Practical III

CO1 Compare different developmental stages in amphioxus fish, frog and hen

CO2 Explain ethological aspects of animals

CO3 Describe ectoparasites and endoparasites with their Parasitic adaptations

CO4 Prepare and stain of temporary slides

Semester IV

Course (Paper) Name: Origin and Evolution of Life, Population and Evolutionary Genetics, Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research (USZO401)

CO1 Describe origin of life and different theories of evolution

CO2 Comprehend the mechanisms of speciation

CO3 Distinguish between microevolution, macroevolution and mega evolution.

CO4 Develop qualities such as critical thinking and analysis and develop the skills of scientific communication

Course (Paper) Name: Cell biology, endomembrane system and biomolecule (USZO402)

CO1 Describe the functioning of nucleus, extra nuclear organelles and understand the intricate cellular mechanisms involved

CO2 Explain composition of the transport mechanisms adopted by the cell and its organelles for its maintenance and composition of cell

CO3 Discuss intricacy of endomembrane system and the interlinking of endomembrane system for functioning of cell

CO4 Summarize the biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids

Course (Paper) Name: Economic Zoology (USZO403)

CO1 Describe basics of sericulture and its scope in India.

CO2 Identify varieties of silkworms, host-plants and aspects on silk extraction and the diseases afflicting silk-worms.

CO3 Apply the culture techniques of prawn, pearl and fish

CO4 Discuss dairy animals' management, the breeds and diseases

Practical I

CO1 Apply the techniques for gathering data in the field of Zoology.

CO2 Compare the prokaryotic cell and eukaryotic cell

CO3 Illustrate the relevance of fossils species in evolution

CO4 Evaluate the different methods of scientific writing and reporting

Practical II

CO1 Test amino acids, carbohydrates, proteins and nucleic acids.

CO2 Evaluate cell diameter by occulometer

CO3 Access permeability of cell through plasma membrane

CO4 Describe ultrastructure of cell organelles

Practical III

CO1 Estimate the protein and fat content in Cow and Buffalo milk sample

CO2 Estimate the Dissolved oxygen, Salinity and conductivity of water sample.

CO3 Describe the commercially important fishery

CO4 Identify major parts of the honeybee such as the stinger or mandibular parts along with life cycle study.

Class: T.Y.B. Sc. Zoology

Semester V

Course (Paper) Name: Principles of Taxonomy, Modern Trends in Taxonomy and study of invertebrates (USC5ZO1)

CO1 Describe the basics concept of taxonomy and classification of animals on the based-on relation to other animals by body structure, external characters and development.

CO2 Illustrate the gradual development and evolutionary history of different kinds of living organisms from earlier forms over several generations

CO3 Demonstrate the internal anatomy of various animals, biodiversity and related indices

CO4 Apply the International rules of Nomenclature to give a scientific name to animals which are found during research.

Course (Paper) Name - Hematology and Immunology (USC5ZO2)

CO1 Comprehend basic haematology and Learner will be able to identify various components of haemostatic systemss

CO2 Employ the skills necessary for the study of hematology

CO3 Describe the skills necessary for the study of immunology and realize the significant role of immune system in giving resistance against diseases.

CO4 Develop diagnostic approach in haematological disorders

Course (Paper) Name and No.: Histology, Toxicology, Enzymology and Biostatistics (USC5ZO3)

CO1 Describe the well-planned organization of tissues and cells in theorgan system.

CO2 Recall the principles of toxicology with particular emphasis on toxic responses to chemical exposures, nature and effect of toxicity and toxicity testing.

CO3 Develop introductory understanding of regulatory affairs in toxicology.

CO4 Describe basics of enzyme structure, function and variations in enzyme activity and kinetics.

Course (Paper) Name – Integumentary system, Human Osteology and Endocrinology (USC5ZO4)

CO1 State importance of epidermal and dermal derivatives and their functions.

CO2 Explain the structure, types and functions of human skeleton.

CO3 Explain basics of endocrinology.

CO4 Summarize about the endocrine glands.

Course (Paper) Name – Oceanography, Aquaculture Practices, Marketing and Finance (USCFB501)

CO1 Describe breeding techniques and skills for culture of major carps.

CO2 Comprehend hatchery and nursery management of major carps and also learn about breeding techniques, hatchery and management of fin-fish and crustaceans and shell fishes

CO3 Develop the knowledge about how to breed and rear ornamental fishes and commercially viable fish species

CO4 Explain the value of maintaining and taking sanitary precautions during the processing and packaging operations

Practical I

CO1 Identify protozoans, poriferans and significance of Platyhelminthes and nemathelminths

CO2 Identify specimens based on its general characters

CO3 Describe the various systems in earthworm

CO4 Summarize the project report based on larval forms of arthopods, molluscs and echinodermata

Practical II

CO1 Illustrate A, B, AB, O and Rh blood group

CO2 Access erythrocytes and leucocytes count from the blood sample

CO3 Examine ESR by Wintrobe method and Haemoglobin by Sahli's Method

CO4 Estimate the total serum and plasma protein by different methods

Practical III

CO1 Describe different types of mammalian tissues

CO2 Demonstrate microtomy with reference to Tissue preservation and fixation, dehydration, infiltration, paraffin embedding and block preparation, sectioning, staining.

CO3 Evaluate the effect of different pH and temperature on enzyme activity

CO4 Solve the problems based on biostatistics

Practical IV

CO1 Identify integumentary systems and its derivatives

CO2 Describe human axial and appendicular skeleton

CO3 Illustrate histological structure of endocrine glands

CO4 Estimate the plasma level in any hormone using ELISA.

Practical V

CO1 Describe function of oceanographic instruments

CO2 Identify various stages of development of carps and prawns

CO3 Describe various types of ornamental fishes and process of setting of aquarium

CO4 Summarize the various types of hatcheries

Semester VI

Course (Paper) Name- Phylum Chordata, Group Euchordata- I, Group Euchordata II and Type study – Shark (USC6ZO1)

CO1 Classify the Chordates up to class with reference to phylogeny and their special features.

CO2 Outline the taxonomy of division Gnathostomata with the distinguishing characters

CO3 Demonstrate the characteristic features and examples of class of Reptilia, Aves and Mammalia

CO4 Compare the vertebrate animal life after studying one representative animal Shark.

Course (Paper) Name – Molecular Biology, Genetic Engineering, Human Genetics and Bioinformatics (USC6ZO2)

CO1 Illustrate the intricacies of chemical and molecular processes that affect genetic material and related areas in relatively new fields of genetic engineering and biotechnology

CO2 Describe the vast array of techniques used to manipulate geneswhich can be applied in numerous fields like medicine, research, etc. for human benefit

CO3 Discuss the impact of changes occurring at gene level on human health and its diagnosis

CO4 Outline the computational point of view of studying the genomes

Course (Paper) Name – Developmental biology (USC6ZO3)

CO1 Review the embryo development and important processes of cell differentiation, stages of development and morphogenesis.

CO2 Illustrate the process of early and late embryonic development in animals.

CO3 Explain the post Embryonic Development and Implications of DevelopmentalBiology.

CO4 Discuss the processes involved in embryonic development andits application.

Course (Paper) Name – Environment and Wildlife management, Bioprospecting, Zoopharmacognosy and Zoogeography (USC6ZO4)

CO1 Describe the different factors affecting environment, impact and environme management laws.

CO2 Develop wildlife habitat projects for animal protection

CO3 Compare paradigms of discovery and commercialization of biological resources ai knowledge gained by self-medication by animals

CO4 Explain how and why different animal speciesare distributed around the globe.

Course (Paper) Name: Marine resources, Post-harvest and Farm Engineering (USCFB601)

CO1 Describe the deep sea and coastal fishes and commercial potential and know about the major landingcenters of the fishes

CO2 Demonstrate crustacean and molluscan fisheries and the performance of landing centers of above fisheries

CO3 Apply the knowledge and practice the preservation and processing techniques for commercial ventures

CO4 Review the knowledge with the knowledge of fish by-products, value-added products and goodmanufacturing practices.

Practical I

CO1 Develop understanding on the diversity of life with regard to- Protochordata, vertebrata

CO2 Categorize animals on the basis of their morphological characteristics/ structures

CO3 Explain the process involved in studying biodiversity and taxonomy

CO4 Describe endoskeleton of shark

Practical II

CO1 Evaluate RNA by orcinol method and DNA by Diphenylamine method

CO2 Separate Genomic DNA Aseptic transfer techniques

CO3 Solve the problems related to Restriction endonucleases

CO4 Demonstrate the tools used in Bioinformatics.

Practical III

CO1 Identify the types of eggs, Cleavage, Blastula and Gastrula

CO2 Demonstrate the whole mounts of developmental stages of chick

CO3 Discuss the developmental stages and life cycle of *Drosophila* from stock culture

CO4 Describe histological structures of placenta

Practical IV

CO1 Apply relevant scientific principles in the area of aquatic biology

CO2 Employ scientific methodologies such as experimentation and data analysis in the area of aquatic biology

CO3 Analyze, interpret and evaluate information relevant to aquatic biology

CO4 Develop employable skills in freshwater biological water quality analysis.

Practical V

CO1 Describe marine fishes, Crustaceans and Molluscs and process of Fish dressing, filleting, prawn peeling – PUD, DV and grading

CO2 Prepare formulated feed for fish and prawn

CO3 Identify the parasitic infections in aquatic organisms

CO4 Illustrate the processes of value-added fish products and by products of fishery products

Course Outcomes

Class: F.Y.B. Sc. Mathematics

Semester I

Course (Paper) Name and No.: Calculus & Paper I USC1MT1

CO1 **Define** Bounded set, Supremum and Infimum of a set

CO2 **Determine** the convergence of sequences of real numbers

CO3 **Examine** the properties of sequences of real numbers

CO4 **Classify** the first order differential equation

Course (Paper) Name and No.: Algebra & Paper II USC1MT2

CO1 **Explain** the basic concepts of set theory

CO2 **Examine** the properties of functions and relations.

CO3 **Apply** well-ordering property, Induction theorems and Binomial theorem.

CO4 **Analyse** properties of the divisibility and congruence relations.

Course: Mathematics Practical-I Course Code: USC1MTP

CO1 **Explain** the properties of real number

CO2 **Solve** the first order first degree differential equation

CO3 **Examine** the properties of sets, functions and relations.

CO4 **Solve** the problems by using Induction theorems, well ordering principle, binomial theorems and congruence relations

Semester II

Course (Paper) Name and No.: Calculus & Paper I USC2MT1

CO1 **Evaluate** limit of a function

CO2 **Examine** Continuity of a function

CO3 **Identify** the differentiable function

CO4 **Find** successive differentiation

Course (Paper) Name and No.: Algebra & Paper II USC2MT2

CO1 **Relate** the system of linear equations and matrices

CO2 **Determine** symmetries and permutations

CO3 **Examine** properties of polynomials and the relation between roots and coefficients

CO4 **Find** solution of the polynomials by using different method

Course: Mathematics Practical-II Course Code: USC2MTP

CO1 **Find** limit and continuity of a function

CO2 **Apply** second derivative test to find local extrema

CO3 **Solve** the system of linear equations

CO4 **Determine** symmetries, permutations and roots of the polynomials

Class: S.Y.B. Sc. Mathematics

Semester III

Course (Paper) Name and No.: Calculus-III & Paper I USC3MT1

CO1 **Evaluate** limit of a functions of several variables

CO2 **Examine** continuity of a functions of several variables

CO3 **Identify** the differentiable functions

CO4 **Apply** multivariable calculus in optimization problems

Course (Paper) Name and No.: Algebra-III & Paper II USC3MT2

CO1 **Define** vector spaces and subspaces

CO2 **Relate** Matrices and linear transformations

CO3 **Find** basis and dimension of a vector space over $\mathbb{R}$

CO4 **Evaluate** the determinant

Course (Paper) Name and No.: Discrete Mathematics & Paper III USC3MT3

CO1 **Define** the basic concepts of graph theory

CO2 **Examine** the properties and applications of graph

CO3 **Analyze** the properties of permutation functions, Pascal's Identity, Circular Permutation and Stirling numbers.

CO4 **Apply** Pigeonhole Principle, Binomial Theorem, Inclusion and Exclusion Principle.

Course (Paper) Name and No.: Mathematics Practical-III USC3MTP

CO1 **Evaluate** limit, continuity and differentiability of functions of several variables.

CO2 **Explain** properties of vector space, linear transformation and determinant

CO3 **Classify** the different types of graphs according to their properties.

CO4 **Solve** the problems by using Pigeonhole Principle, Binomial Theorem, Inclusion and Exclusion Principle and permutations.

Semester IV

Course (Paper) Name and No.: Calculus-IV & Paper I USC4MT1

CO1 **Identify** Riemann integrability of functions

CO2 **Apply** fundamental theorem to definite integrals

CO3 **Define** Beta and Gamma functions

CO4 **Examine** convergence of Improper Integrals

Course (Paper) Name and No.: Algebra-IV & Paper II USC4MT2

CO1 **Explain** properties of inner product space

CO2 **Determine** orthogonality in inner product space

CO3 **Find** eigenvalues and eigenvectors

CO4 **Identify** diagonalizable matrix

Course (Paper) Name and No.: Ordinary Differential Equation & Paper III USC4MT3

CO1 **Recall** the methods to solve the first order differential equations.

CO2 **Solve** second order linear differential equations by using variation of parameter, reduction method and method of undetermined coefficients

CO3 **Apply** the power series method to find the solution of second order differential equations.

CO4 **Solve** second order differential equations by using Laplace Transform

Course: Mathematics Practical-IV Course Code: USC4MTP

CO1 **Determine** properties of Riemann integration , indefinite and improper integrals

CO2 **Explain** properties of inner product space, eigenvalues , eigenvectors and diagonalizable

CO3 **Apply** power series method and different techniques to find the solution of second order differential equations.

CO4 **Solve** the differential equations by using Laplace Transform

Course Outcomes

Class: F.Y.B. Sc. Physics

Semester I

Course (Paper) Name and No.: Classical Physics, Basic Electrodynamics, Thermodynamics, Physics 1 USC1PH1

CO1 Summarise properties of matter, vectors algebra, laws of thermodynamics.

CO2 Apply the laws of thermodynamics to formulate the relations necessary to analyse a thermodynamic process, laws of vector algebra, elasticity, fluid dynamics concepts in various physical situations.

CO3 Explain crystal system, crystal planes and its direction, different coordinate system and interconversion between them, mechanical properties of matter and fluid with its application,

CO4 Solve sums based on miller indices, Bravais lattices, vector algebra, elasticity, fluid dynamics, thermodynamics.

Course (Paper) Name and No.: Nuclear Physics & Analog Electronics, Physics 2 USC1PH2

CO1 Explain nuclear reactions, interactions between subatomic particles, construction & working of gas filled nuclear detectors, digital electronic circuits, number systems, AC Circuits & AC Bridges

CO2 Solve numerical problems related to Binary Addition & subtraction, Nuclear Reactions, response of purely resistive, capacitive & inductive circuits, RC circuit, LR circuit and LCR circuits to an AC Signal using phasor diagrams and AC Bridges.

CO3 Evaluate the balancing conditions for Maxwell's Bridge, de-Sauty's Bridge, Wien Bridge, Hay Bridge.

CO4 Determine the equations of total current(I) impedance(Z) & phase angle for purely resistive, capacitive & inductive circuits, RC circuit, LR circuit and LCR circuit using phasor diagram.

Course Name and No.: Practical USC1PHP

CO1 Make use of measuring devices such as Digital Multimeter, Vernier Calliper, Micrometre Screw Gauge, Travelling Microscope, spectrometer.

CO2 Construct circuits using Resistors, Inductors, Capacitors, Voltmeter, Ammeter, LDR, transformers and logic gates

CO3 Measure different mechanical properties of Solids like the Moment of Inertia, Modulus of Elasticity, Coefficient of Viscosity, temperature coefficient of resistance of Thermistor and Joule's Constant.

CO4 Determine capacitance, inductance, frequency of AC mains, lattice parameters and interplanar spacing.

Semester II

Course (Paper) Name and No.: Optics, Mathematical physics, Wave Motion, Physics 1 USC2PH1

CO1 Apply lens maker equation, concepts of differential equation in circuits, second law of thermodynamics to Heat Engines.

CO2 Deduct current, charge in LR, RC circuit in terms of equation and graph, equivalent focal length, cardinal points for thin and thick lens, work done in Carnot cycle, efficiencies of heat engines.

CO3 Discuss natural physical processes related to light waves, lens system, aberration, Heat Engines, Second law of thermodynamics.

CO4 Solve numerical problems related to homogenous and inhomogenous equations, lens, Aberration, Carnot Cycle, Carnot heat Engine & other Heat Engine.

Course (Paper) Name and No.: Modern Physics, DC Circuits & Digital Electronics, Electrostatics, Magnetostatics, Geophysics, Physics 2 USC2PH2

CO1 Explain the wavelike behaviour of a particle, the concept of matter wave and the distribution of Energy for a Black body radiator.

CO2 Solve numerical problems based on matter waves, D. C. Circuits, Network theorems, Electric field and magnetic field.

CO3 Analyse electric network circuits using Thevenin's theorem, Norton theorem, Superposition theorem, Reciprocity theorem and Maximum Power Transfer theorem..

CO4 Discuss on rectifier circuits, Capacitor Filter circuits, Inductor filter circuits, CLC or Pi Filter circuits. and voltage regulator circuits.

Course Name and No.: Practicals USC2PHP

CO1 Utilise Optical Instruments such as the Spectrometer, Prism, Lenses for finding Optical properties like the Refractive Index of the material of the Prism, equivalent focal length.

CO2 Determine moment of inertia & acceleration due to gravity.

CO3 Justify Norton's & Thevenin's theorem, Zener diode, Bridge rectifier as voltage regulator, Transistor characteristics.

CO4 Design circuits using Diodes, transistors, resistors, transformers.

Class: S.Y.B. Sc. Physics

Semester III

Course (Paper) Name and No.: Mechanics and Thermodynamics Physics-1 USC3PH1

CO1 explain the laws of conservation of momentum & energy, compound pendulum, damped & forced harmonic oscillator, thermodynamic processes, Construction & Working of different types of Heat Engines and the second law of thermodynamics.

CO2 formulate equations for the motion of the rocket, conditions for forced & damped harmonic oscillator, time period of compound pendulum, efficiency and work done of Heat Engines.

CO3 solve numerical problems based on laws of conservation of momentum & energy, compound pendulum, damped harmonic oscillator, forced harmonic oscillator, heat engines.

CO4 distinguish between thermodynamic processes, Otto Engine & Diesel Engine, Simple Pendulum & Compound Pendulum, Damped Oscillations & Forced Oscillations.

Course (Paper) Name and No.: Mathematical Physics, Analog Electronics Physics 2 USC3PH2

CO1 Solve vector calculus and Fundamental Theorem of Line Integrals, Green's Theorem, Stokes' Theorem, or Divergence Theorem to evaluate integrals,

CO2 determine the operating point, stability factor for different transistor biasing methods, frequency of oscillator, voltage gain of opamp in different applications

CO3 estimate the mathematical relation between cylindrical & spherical coordinate system.

CO4 design basic circuits using Op-amp , transistor , oscillator

Course (Paper) Name and No.: Material Physics & Geophysics Physics-3 USC3PH3

CO1 explain the factors affecting Acoustics of buildings, Principle of operation of LASER and Propagation of light through Optical Fiber, variation of Physical and Chemical properties in the interior of the Earth, Continental drift, Plate tectonics, Types of plates and Cause of Earthquake.

CO2 solve the numerical problems based on Numerical aperture, Acoustics of Buildings, Intensity of Laser and Miller indices.

CO3 classify the crystals on the basis of the crystal system and Bravais lattices.

CO4 compare the materials on the basis of Electrical conductivity and relative magnetic permeability.

Course Name and No.: Practicals USC3PHP

CO1 experiment with bridge rectifiers, oscillators, Ballistic galvanometers.

CO2 inspect Stefan's law, Brewster's law, e/m by Thomson's method, passive filters, applications of op-amp, CE amplifier, NAND & NOR as Universal Building Block

CO3 construct electronic circuits using resistor, capacitor, diode, transistor, IC-741 (Op-Amp), logic gates.

CO4 estimate physical constants related to solids.

Semester IV

Course (Paper) Name and No.: Wave Optics Physics-1 USC4PH1

CO1 explain the Construction and Working of Michelson's Interferometer & Febry-Perot Interferometer, Fresnel's class of Diffraction, Fraunhofer class of Diffraction and the phenomenon of polarization.

CO2 solve numerical problems related to Michelson's Interferometer & Febry-Perot Interferometer, Fresnel's Diffraction, Fraunhofer Diffraction and Brewster's law

CO3 formulate equations for the wavelength of light, difference in wavelength of light, refractive index of gases using Michelson's Interferometer & Febry-Perot Interferometer, separation between diffraction minima & maxima in Fresnel's class of Diffraction and Fraunhofer class of Diffraction.

CO4 distinguish between the Michelson's Interferometer & Febry-Perot Interferometer, Fresnel's class of Diffraction and Fraunhofer class of Diffraction and unpolarized light, plane polarized light, circularly polarized light & elliptically polarized light.

Course (Paper) Name and No.: Quantum Mechanics, Physics 2 USC4PH2

CO1 Explain postulates of quantum mechanics, operators, expectation values in quantum mechanics and Schrodinger's equation.

CO2 apply boundary conditions to calculate the transmission and reflection coefficients for free & bound states.

CO3 Solve the Schrodinger steady state equation in free and bound state.

CO4 elaborate Schrodinger's equation to radioactive decay and harmonic oscillator.

Course (Paper) Name and No.: Digital Electronics, Radio Communication, Physics-3 USC4PH3

CO1 explain Flip-Flop, Shift registers, counters, 8085 microprocessor architecture and modulation techniques used in wireless communication system

CO2 solve the numerical problems based on the conversion of numbers in different Number Systems.

CO3 elaborate shift registers and counter circuits using Flip-Flop and logic gates.

CO4 design a programme logic for an 8085 microprocessor using various 8085 instructions.

Course Name and No.: Practicals USC4PHP

CO1 determine physical constants of solids, the Resolving power of telescope & grating, wavelength of the monochromatic light, refractive index.

CO2 design & construct MS-JK flip flop (IC 7476), Latch (IC 7400/IC 7402) , 8:3 Priority Encoder (IC 74LS148) and 3:8 Decoder (IC 74LS138), shift register, oscillator, Half adder and full adder using EX-OR gate, Op-amp as a Differentiator and Integrator.

CO3 compose programme using 8085 microprocessor

CO4 Experiment with IC-7486, IC-7408, IC-7476, IC-7400, IC-7402, IC-74148, IC-74138, IC-74194, IC-741, spectrometer, telescope.

Course Outcomes

Class: F.Y.B. Sc. Botany

Semester I

Course (Paper) Name and No.: Plant Diversity I USC1BO1

CO1 Identify and differentiate between the different plant groups.

CO2 Understand the ecological & economic importance of each of the different plant groups.

CO3 Describe general characteristics of Class Cyanophyceae and Chlorophyceae and write down lifecycle of *Nostoc* and *Spirogyra*

CO4 Describe general characteristics of Class Phycomycetae and write down lifecycle of *Saprolegnia* and *Rhizopus.*

CO5 Describe general characteristics of Class Hepaticae and write down lifecycle of *Riccia*

Course (Paper) Name and No.: Form and Function I USC1BO2

CO1 Describe concepts in Mendelian, non-Mendelian genetics, epistasis and chromosomal method of sex determination.

CO2 Explain mitosis and the types and structure of Nucleic acids.

CO3 Differentiate between eukaryotic and prokaryotic cells and the ultrastructure of mitochondria and chloroplast.

CO4 Distinguish between simple and complex tissues, different types of vascular bundles and primary body of dicots and monocots.

Course (Paper) Name and No.: Plant Diversity I and Form and Function I USC1BOP

CO1 Identify *Nostoc, Spirogyra, Aspergilus, Riccia,* and different types of lichens and vascular bundles.

CO2 Prepare slides to show gram staining, structure of dicot and monocot root and stem and an idiogram from photomicrograph.

CO3 Construct a histogram, pie chart and frequency polygon.

CO4 Calculate mean, median, mode, standard deviation.

Semester II

Course (Paper) Name and No.: Plant Diversity I USC2BO1

CO1 Describe general characteristics and economic importance of families Cruciferae, Apocynaceae, Euphorbiaceae and Amaryllidaceae and economic importance of Gymnosperms

CO2 Explain the different systems of classification and life cycles of *Nephrolepis* and *Cycas*.

CO3 Classify *Nephrolepis, Cycas* and families Cruciferae, Apocynaceae, Euphorbiaceae and Amaryllidaceae

CO4 Differentiate between the different plant groups namely Pteridophytes, Gymnosperms and Angiosperms.

Course (Paper) Name and No.: Form and Function I USC2BO2

CO1 Describe mechanism of enzyme action, enzyme inhibition, kinetics and classification of enzymes, mechanism of stomatal movements, guttation, wilting and enzymes used in gene cloning.

CO2 Explain the concept of ecosystem, food chain, food web, energy flow and edaphic factors.

CO3 Differentiate between different types of enzymes, transpiration, cloning vectors biotic interactions and types of soil.

CO4 Compare primary and secondary metabolites.

Course (Paper) Name and No.: Plant Diversity I and Form and Function I USC2BOP

CO1 Identify *Nephrolepis, Cycas*, families Cruciferae, Apocynaceae, Euphorbiaceae, Amaryllidaceae and different types of biotic interactions.

CO2 Prepare slides to show internal structure of *Nephrolepis, Cycas* and stomata.

CO3 Determine activity of enzymes lipase and amylase, effect of pH on Anthocyanin pigments, organic content of soil and enzyme immobilization.

CO4 Differentiate between tannins, alkaloids and terpenoids.

Class: S.Y.B. Sc. Botany

Semester III

Course (Paper) Name and No.: Plant Diversity II USC1BO1

CO1 Describe general characteristics of Class Cyanophyceae, Chlorophyceae, Phycomycetae and Hepaticae

CO2 Explain life cycles of *Nostoc, Spirogyra, Saprolegnia, Rhizopus* and *Riccia*

CO3 Differentiate between the different plant groups namely Algae, Bryophyta and Fungi.

CO4 Classify *Nostoc*, *Spirogyra, Saprolegnia, Rhizopus* and *Riccia*

Course (Paper) Name and No.: Form and Function II USC1BO2

CO1 Describe concepts in Mendelian, non-Mendelian genetics, epistasis and multiple allelism.

CO2 Explain the concept of ecosystem, food chain, food web, and energy flow.

CO3 Differentiate between eukaryotic and prokaryotic cells and the ultrastructure of cell wall, cell membrane, mitochondria, chloroplast and endoplasmic reticulum.

CO4 Distinguish between the features of different types of aquatic and terrestrial ecosystems

Course (Paper) Name and No.: Plant Diversity II and Form and Function II USC1BOP

CO1 Identify *Nostoc, Spirogyra, Saprolegnia, Riccia,* Hydrophytes, Mesophytes, Xerophytes, Halophytes and different examples of biotic interactions.

CO2 Prepare slides to show gram staining, cell inclusions, mitochondria from suitable material and an idiogram from photomicrograph.

CO3 Construct a histogram, pie chart and frequency polygon.

CO4 Calculate mean, median, mode, standard deviation.

Course (Paper) Name and No.: Current Trends in Plant Sciences I USC2BO1

CO1 Describe general characteristics and economic importance of families Cruciferae, Apocynaceae, Euphorbiaceae and Amaryllidaceae and economic importance of Gymnosperms

CO2 Explain inflorescence morphology and life cycles of *Nephrolepis* and *Cycas.*

CO3 Differentiate between the different plant groups namely Pteridophytes, Gymnosperms and Angiosperms.

CO4 Classify Nephrolepis, Cycas and families Cruciferae, Apocynaceae, Euphorbiaceae and Amaryllidaceae

Semester IV

Course (Paper) Name and No.: Plant Diversity II USC2BO1

CO1 Describe general characteristics and economic importance of families Cruciferae, Apocynaceae, Euphorbiaceae and Amaryllidaceae and economic importance of Gymnosperms

CO2 Explain inflorescence morphology and life cycles of *Nephrolepis* and *Cycas.*

CO3 Differentiate between the different plant groups namely Pteridophytes, Gymnosperms and Angiosperms.

CO4 Classify Nephrolepis, Cycas and families Cruciferae, Apocynaceae, Euphorbiaceae and Amaryllidaceae

Course (Paper) Name and No.: Form and Function II USC2BO2

CO1 Describe mechanism of enzyme action, enzyme inhibition, kinetics and classification of enzymes.

CO2 Explain concepts of primary and secondary metabolites and Write down the sources, parts used, active constituents and medicinal uses of adulsa, tulsi, ginger, turmeric, sandalwood and aloe.

CO3 Differentiate between different tissue systems, epidermal appendages and primary structure of Dicots and Monocots.

CO4 Compare water potential, solute potential, matric potential and pressure potential

Course (Paper) Name and No.: Current Trends in Plant Sciences I

CO1 Describe the different garden features.

CO2 Understand the concept of different types of gardens, formal and informal.

CO3 Describe plant tissue culture with reference to organogenesis, totipotency, embryo, root, meristem and another culture.

CO4 Understand the concept of gene cloning with reference to enzymes and vectors used in gene cloning

Programme- M.Sc.

Department of Chemistry

Programme Outcome

PSO1 Knowledge: develop knowledge, understanding and expertise in their chosen field of chemical science.

PO2 Green Approach: awareness about usage of environmental methodologies

PO3 Analytical Approach: develop critical thinking and problem solving ability with accuracy and valid reasoning

PO4 Effective communication: develop ability to analyse, interpret and communicate effectively the ideas, knowledge and information orally, written, electronically and through media

PO5 Social responsibility: understanding of socially relevant aspects of the subjects, application of knowledge for sustainable development, awareness about environmental and health safety

PO6 Ethics: understand the different values and moral dimensions associated with knowledge, decisions and related responsibility

PO7 Personality development: build the personality of an individual as a responsible citizen, scientist, academician, industrialist, team leader, team member, social personality

Course Outcomes

Class: M.Sc. I Chemistry

Semester I

Course (Paper) Name and No.: Physical Chemistry PSC1PC1

CO1 Prove Maxwell relations and their significance and applications to ideal gases, Joule Thomson experiment, Joule Thomson coefficient, and inversion temperature. Apply the Third law of Thermodynamics to find out absolute entropy

CO2 Make use of quantum mechanics for Particle waves and Schrödinger wave equation, wave functions, properties of wave functions, Normalization of wave functions, orthogonality of wave functions. Particle in a one, two- and three-dimensional box

CO3 Define, understand basic terms of Chemical Dynamics i.e. rate constant, order of reaction, molecularity of reaction also compare Composite Reactions and Polymerization reactions

CO4 Know the working of Batteries: Alkaline fuel cells, Phosphoric acid fuel cells, High-temperature fuel cells [Solid –Oxide Fuel Cells (SOFC) and Molten Carbonate Fuel Cells]

Practical's PSC1PCP

CO1 Know the principles ofConductometry, pH Metry.

CO2 Determine the heat of solution of sparingly soluble acid and identify the reaction between acetone and iodine.

CO3 Know the principles of Potentiometry.

CO4 Understand to determination of order of reaction.

Course (Paper) Name and No.: Inorganic Chemistry PSC1IC1

CO1 Explain theories of bonding, hybridization, resonance concept, MOT for diatomic species of first transition Series, Polyatomic species and hydrogen bonding

CO2 Explain The concept of band theory, Fermi level, K-Space and BrillouinZones. Structures of Compounds of the type: AB, AB2 etc. and Preparative methods of inorganic solids & nano materials.

CO3 Construct Group Multiplication Tables, Character tables using concept of Molecular Symmetry and Group Theory.

CO4 Determine electronic parameters such as Δ, B, C, Nephelauxetic ratio, formation constants of metal complexes and Characterize coordination compounds using techniques like thermal studies, Conductivity measurements, electronic spectral and magnetic measurements, IR, NMR and ESR spectroscopic

Practical's PSC1ICP

CO1 Prepare various inorganic complexes such as Tetramminemonocarbanato Cobalt (III) Nitrate, Bis (ethylenediammine) Copper (II) Sulphate, Hydronium dichlorobis(dimethylglyoximato) etc.

CO2 Determine the electrolytic nature of inorganic compounds

CO3 Apply Slope intercept method for determination of equilibrium constants for Fe^{+3}/ SCN- system.

CO4 Analyze the inorganic complex for percentage of metal and ligand.

Course (Paper) Name and No.: Organic Chemistry PSC1OC1

CO1 Recall the terms related to physical organic Chemistry, Factors affecting, acidity and basicity, Electronegativity and inductive effect, resonance, bondstrength, electrostatic effects, hybridization, aromaticity and solvation.

CO2 Summarize the various aspects of aromaticity, aliphatic and aromatic nucleophilic substitution reactions with their mechanism and examples.

CO3 Apply the concept of Configurational descriptors

(R,S nomenclature) to chiral centres in Organic compounds

CO4 Predict the mechanism, selectivity, importance and applications of oxidizing and reducing agent

Practical's PSC1OCP

CO1 Plan preparation of organic compounds

CO2 Demonstrate the skill of purification of organic compounds byrecrystallization and sublimation methods.

CO3 Apply the thin layer chromatography technique to check the purity of thesynthesized product.

CO4 Sketch the structure of organic compounds using software ChemBiodraw.

Course (Paper) Name and No.: Analytical Chemistry PSC1AC1

CO1 Explain the concept of data domain, performance characteristics of an instrument/method, total quality management, quality standards for laboratories, quality audits and quality reviews

CO2 Discover the applications of UV-Visible spectroscopy, IR spectroscopy, Differential scanning calorimetry

CO3 Identify the need of automation in chemical analysis, safety measures in laboratory, need of accreditation of laboratories and GLP

CO4 Interpret the data based on calculations

Practical's PSC1ACP

CO1 Demonstrate the titration skills for the analysis of samples of a diverse variety

CO2 Apply the statistical methods for data analysis

CO3 Analyze the measured data based on Chemical principles

CO4 Measure the characteristics of ion exchange resins

Semester II

Course (Paper) Name and No.: Physical Chemistry PSC2PC1

CO1 Explain Bioenergetics, Real solutions and Fugacity of real gases also showgraphical representations of BET isotherms

CO2 Prove expressions for the total wave function for 1s, 2s, 2p and 3d orbitals of hydrogen and aapplication of the Schrödinger equation to two electron system

CO3 Explain terms involved in Chemical Kinetics and Molecular Reaction Dynamics. Elementary Reactions in Solution, Kinetics of reactions catalysed by enzymes - Michaelis-Menten analysis, Lineweaver-Burk and Eadie Analyses, Inhibition of Enzyme action.

CO4 Apply types of Defects and Stoichiometry, phase rule to solve numericals.

Practical's PSC2PCP

CO1 Understand principles of different instruments like Potentiometry and colorimeter

CO2 Study Phase diagram of three component system.

CO3 Know the principles of Conductometry, pH Metry.

CO4 Determine the heat of solution of sparingly soluble acid and identify the reaction between acetone and iodine.

Course (Paper) Name and No.: Inorganic Chemistry PSC2IC2

CO1 Recall Organometallic Chemistry of Transition metals, Eighteen and sixteen electron rules, Preparation and property's structure and bonding of the Organometallic compounds

CO2 Explain factors affecting the rate of reactions, techniques for determination of rate of reaction. Explain Ligand substitution reactions of: Octahedral complexes, Square planar complexes, trans-effect, its theories and applications. Redox reactions: inner and outer sphere mechanisms,

stereochemistry of substitution reactions of octahedral complexes

CO3 Explain Bioinorganic Chemistry related to biological oxygen carriers; hemoglobin,

hemerythrene and hemocyanine- structure of metal active center and differences in mechanism of oxygen binding, Copper containing enzymes, Nitrogen fixation Metal ion transport and storage, Medicinal applications of cis-platin and related compounds.

CO4 Discuss the implication of toxic metallic species radioactive materials on the environment and biological system using case studies.

Practical's PSC2ICP

CO1 Analyze ores and alloys using volumetric and gravimetric analysis.

CO2 Estimate percentage of metals in the ore and alloy

CO3 Apply the potentiometric method for redox titrations of Fe, Cu etc.

Course (Paper) Name and No.: Organic Chemistry PSC2OC2

CO1 Explain the Generation of carbanion, enolate, enamine with their alkylation & acylation reaction and name reactions with their mechanism.

CO2 Illustrate mechanism, stereochemistry, applications and importance of namereactions and rearrangements.

CO3 Calculate maximum λ max for diene and enone system using WoodwardFisher rule.

CO4 Interpret the structure of organic compounds using combined of spectraltechniques.

Practical's PSC2OCP

CO1 Identify the chemical type of components present in a binary mixture of an organic compound.

CO2 Apply skills in the separation and qualitative analysis of organic compounds of binary mixtures by microscale technique.

CO3 Make use of crystallization, sublimation and distillation for purification of the organic compounds.

CO4 Demonstrate the practical aspects in the preparation of the organic compounds derivatives.

Course (Paper) Name and No.: Analytical Chemistry PSC2AC2

CO1 Translate the theoretical principles of advanced separation techniques, spectroscopic techniques, radioanalytical techniques, electroanalytical techniques into applications.

CO2 Explain the working principles of surface analytical techniques such as SEM, STM, TEM, ESCA, Auger spectroscopy and ICPAES

CO3 Compare the different ion sources and mass analyzers in mass spectroscopy

CO4 Determine the electrical quantities such as charge, current, potential using Electroanalytical methods

Practical's PSC2ACP

CO1 Demonstrate the operational skills on the selected instruments and retrieve information

CO2 Develop a sense of time management, safe use of chemicals and environmental safety

CO3 Measure the physical property of the samples and relate it with quantity

Construct the graphs based on the measurements and calculations

Programme – M.Sc. II Analytical Chemistry

Department of Chemistry

Programme Specific Outcome:

PSO1 Students will have a strong foundation in the fundamentals and application of various theoretical concepts in Analytical, Inorganic, Organic and Physical Chemistry

PSO2 Students will learn advanced characterization techniques by gaining the knowledge of spectroscopy, chromatography, electroanalytical methods, hyphenated techniques and chemistry of synthetic and natural products

PSO3 Student will learn the usage of analytical instruments, select, and apply appropriate techniques and resources for the analysis

PSO4 Students will demonstrate their laboratory skills in qualitative, quantitative, separation and advanced instrumental methods

PSO5 Students will identify the need of IPR by integrating the knowledge of total quality management, GLP and GMP

PSO6 Research ability will be developed as the students get skilled to problem solving, critical thinking and analytical reasoning as applied to scientific problems

PSO7 The ability to communicate scientific information in written, oral and electronic formats will be developed among students

PSO8 Students will be able to learn application of various softwares for interpretation and representation of results

Course Outcomes

Class: M.Sc. II Analytical Chemistry

Semester III

Course (Paper) Name and No.: Analytical Chemistry I PSC3QAC

CO1 Explain the regulatory affairs in pharmaceutical industries, GMP and GLPregulations and role and responsibilities of analyst in quality control.

CO2 Describe variety of analytical methods to separate, characterize and analyze the samples of various matrices

CO3 Measure the uncertainty in results and signal to noise ratio for improving theresults.

CO4 Use sampling techniques, pretreatment techniques, performance criteria, validation parameters suitable to selected analytical methods.

Practical's PSC3QAP

CO1 Explain the theoretical principle of the experiment

CO2 Use technical and manipulative skills in instrumental methods of analysis

CO3 Make use of instrumental methods for analysis of samples

CO4 Analyze the data graphically to express relations between two quantities

Course (Paper) Name and No.: Analytical Chemistry II PSC3AIT

CO1 Explain the theoretical concept and working principle of spectroscopic and electroanalytical techniques

CO2 Write the applications of advanced instrumental techniques

CO3 Classify the advanced instrumental techniques based on their workingprinciple

CO4 Describe the principle and working of instruments, and processes

Practical's PSC3AIP

CO1 Apply laboratory skills in analysis of pharmaceuticals, cosmetics andbiological samples

CO2 Intreprete results by calculation and graph

CO3 Compare the results with reference values to calculate percentage error

CO4 Prepare laboratory reports

Course (Paper) Name and No.: Analytical Chemistry III PSC3BCF

CO1 Summarize bioanalytical techniques

CO2 Construct reasonable mechanisms for immunological reactions

CO3 Apply the physical and chemical methods for analysis of variety of naturalfood and processed food

CO4 Distinguish food preservation and processing methods

Practical's PSC3BCP

CO1 Use appropriate pretreatment or extraction method for analysis

CO2 Compare the results with recommended levels/permissible limits.

Determine specific nutrients in different food samples

Interpret the experimental results

Course (Paper) Name and No.: Analytical Chemistry IV

CO1 Memorize air/water pollution regulations, quality requirements andpermissible limits

CO2 List industrial pollutants and their impact on environment

CO3 Describe variety of industrial pollutants

CO4 Apply analytical methods for analysis of air/water/soil pollution

Practical's PSC3ENP/ PSC3POP

CO1 Determine percent composition of ores and alloys

CO2 Evaluate chemical parameters of water samples

Select suitable method for analysis of metallurgical samples

Interpret results to define the quality of the samples

Course (Paper) Name and No.: Analytical Chemistry V PSC3POA

CO1 Define the role of analyst in quality control and forensic laboratories

CO2 Classify drugs, dosage forms and pharmaceutical formulations

CO3 Select appropriate chemical and instrumental methods, for the pharmaceutical, cosmetics and forensic analysis

CO4 Apply chemical, instrumental, biological, microbiological and enzymatic methods for pharmaceutical assay.

Semester IV

Course (Paper) Name and No.: Analytical Chemistry I PSC4QAC

CO1 Explain principles of separation methods such as membrane separation, electrophoresis and solvent extraction

CO2 Apply separation, analysis and standardization methods for analysis

CO3 Employ the methods and chemicals that are benign for human health and the environment, which include principles of green chemistry

CO4 Make use of separation methods to analyze variety of samples

Practical's PSC4REM

CO1 Outline the principles of the quantitative measurements using instrumentalmethods

CO2 Make use of suitable methods of sample preparation and pre-treatment

CO3 Select the calibration parameters for the instrument to obtain accuracy in measurements.

CO4 Apply the instrumental techniques for analysis of commercial samples

Course (Paper) Name and No.: Analytical Chemistry II PSC4AIT

CO1 Explain the principles of 1-D, 2-D NMR, MRI imaging, mass spectroscopy, Raman spectroscopy, thermal and radiochemical methods.

CO2 Select the radioanalytical and thermal methods for the analysis

CO3 Interpret NMR and Mass spectra for molecular identification

CO4 Distinguish hyphenated techniques on the basis of the possible hyphenationsand role of interface.

Practical's PSC4AIP

CO1 Make use of standard operating procedures and related references

CO2 Select the appropriate method to solve the analytical problem associated with the quality testing.

CO3 Compare the results with the reference values

CO4 Develop hands-on experience of quality control assays/tests of the commercial samples

Course (Paper) Name and No.: Analytical Chemistry III PSC4STA

CO1 Illustrate the metallurgical process and their impact on environment

CO2 Identify the methods used for analysis of polymers and plastics and their impact on environment

CO3 Apply the knowledge of effluent parameters, permissible limits and recovery methods to recycle and reuse of treated waste

CO4 Propose appropriate treatment techniques for industrial effluent and solid waste management

Practical's PSC4STP

CO1 Demonstrate the safety and environmental protection procedures

CO2 Make use of valid sampling technique for food and environmental samples having diverse variety

CO3 Apply analytical methods used for quantifying the composition and reactions of food components

CO4 Interpret and report data derived from chemical experiments/analysis in a meaningful way

Course (Paper) Name and No.: Analytical Chemistry IV PSC4IPR

CO1 Define various terminologies related to IPR

CO2 Explain the role of law in the violation of IPR

CO3 Summarize the various models of cheminformatics

CO4 Apply the knowledge of cheminformatics to predict the properties of compounds, structures and drug designing

Practical's PSC4IPP/ PSC4REP

CO1 Analyze the print and digital resources critically to formulate the research problem, argue and justify the statements

CO2 Apply the existing methodologies or develop a new methodology to address the research problem

CO3 Interpret the results and structure it to communicate via dissertation, and oral presentation by following ethical guidelines

CO4 Build an experience on the analytical chemistry problems in a professional environment at industry or a professional laboratory

Course (Paper) Name and No.: Analytical Chemistry V PSC4QAP

CO1 Explain the importance of different types of print and digital resources forgap analysis and data collection

CO2 Analyze scientific data by statistical and graphical methods

CO3 Interpret the results and its communication through lab reports, research papers and oral presentations following ethical practices

CO4 Design/propose methodologies preferably with green and safe approach to conduct research

Programme – M.Sc. II Organic Chemistry

Department of Chemistry

Programme Specific Outcome

PSO1 PSO1: Develop analytical thinking and apply the same for understanding principles, proposing mechanism and logical conclusions.

PSO2 PSO2: Comprehensive understanding of the interdisciplinary nature of Chemistry and emerging trends in Chemistry.

PSO3 PSO3: Enormous employment opportunities at Research and Development as well as synthetic division of chemical, pharmaceutical, dyestuff and food industries.

PSO4 PSO4: Competency in design and planning of synthesis and carry out with Good Laboratory Practices.

PSO5 PSO5: Access, search and use of chemical literature and acquiring necessary skills to succeed in research and advance studies.

PSO6 PSO6: Research opportunities to pursue Ph.D. programme.

PSO7 PSO7: Competency in handling instruments and interpretation of spectral data for structure determination of organic compounds

Course Outcomes

Class: M.Sc. II Organic Chemistry

Semester III

Course (Paper) Name and No.: Organic Chemistry I PSC3TOC0

CO1 Explain the structure, generation, stability and reactions of organic reactive intermediates and importance of neighboring group participation, role of FMOs.

CO2 Apply the principles of photochemistry to carbonyl compounds, olefins,arenes and radical reactions.

CO3 Identify pericyclic reactions and describe cycloaddition reactions,electrocylic reactions and sigmatropic rearrangements

CO4 Analyze conformation of medium size ring, fused ring, bridge ring, steroids and reactivity of addition, elimination, rearrangement and reduction with stereoselective and stereospecific reactions.

Practical's PSC3NPP0 & (PSC3MBP0 or PSC3BIP0)

CO1 Demonstrate the skills in organic preparations required for pursuing a career in the pharmaceutical, chemical industry, research etc.

CO2 Make use of column chromatography, crystallization steam and vacuum distillation for purification of the organic compounds

CO3 Identify the prepared organic compounds by Thin Layer Chromatography

Course (Paper) Name and No.: Organic Chemistry II PSC3SOC0

CO1 Summarize generation, stability, structure, stereochemical aspects of free radicals, its characteristic reactions and use in organic synthesis.

CO2 Explain preparation of organometallic compound, its applications, mechanism and regiochemistry of reactions involving metals/non-metalsin organic synthesis.

CO3 Compare between enamines and enolates, methods of preparation, applications with stereochemical aspects in synthetic reactions

CO4 Predict the products of name reactions, domino reactions, click reactions, multicomponent reactions and describe the mechanisms showing how the products are formed

Practical's PSC3TOP0 & PSC3SOP0

CO1 Demonstrate the practical aspects in the preparation of the organic compounds and their derivatives

CO2 Identify the chemical type of components present the in ternary mixture of organic compounds.

CO3 Apply skills in detection, identification and separation of organic compounds of ternary mixtures by microscale technique.

Course (Paper) Name and No.: Organic Chemistry III PSC3NPS0

CO1 Explain the occurrence, structural features, and biological importance of natural products.

CO2 Draw conclusion based on evidence for structure elucidation and synthesis of natural products.

CO3 Explain multistep synthesis of natural products.

CO4 Interpret the data for the structure elucidation of organic compounds based on UV, IR, ^{1}HNMR and ^{13}C-NMR.

Course (Paper) Name and No.: Organic Chemistry IV PSC3MBG0

CO1 Demonstrate the knowledge of the twelve principles of Green Chemistry which they can practice to a range of work places for a safer, less toxic and healthier environment.

CO2 Explain the basic terms used in medicinal chemistry, the pharmacokinetics of drug, drug structure activity relationship, physical chemical parameters of drug and procedures in drug design.

CO3 Apply skills required for drug design, development of modern methods of synthesis required for employment in the pharmaceutical industries.

CO4 Build the biogenesis and biosynthesis of natural products by acetate pathway, shikimate pathway and mevalonate pathway

Course (Paper) Name and No.: Organic Chemistry V Bioorganic chemistry PSC3BIC0

CO1	Summarize amino acids, peptides, proteins, and nucleic acids andchemical synthesis of oligonucleotides.
CO2	Explain importance of enzymatic reactions and factors affecting enzymekinetics.
CO3	Relate the importance of enzymes in the synthesis of organic compound.
CO4	Explain structure, mechanism of action and biomodelling studies of co-enzyme.

Semester IV

Course (Paper) Name and No.: Organic Chemistry I PSC4NPH0

CO1 Explain occurrence, classification, structural and stereochemical featuresof steroids, insect pheromones, insecticides, vitamins and their biological role in life related processes.

CO2 Plan the synthesis of biologically important steroids, vitamins, antibioticsinsecticides and pheromones.

CO3 Construct the names of monocyclic/bicyclic/tricyclic heterocyclic compounds by IUPAC nomenclature and replacement nomenclature

CO4 Apply fundamentals of heterocyclic reactivity and synthesis skills required for heterocyclic compounds in research and industry.

Practical's PSC4TOP0 & PSC4SOP0

CO1 Plan the synthesis of organic compounds.

CO2 Make use of thin layer chromatography and physical constant to know the purity of organic compounds

CO3 Apply principles of purification techniques such as recrystallization and distillation for purification of organic compounds.

CO4 Compare spectral data of reactant and product and explain mechanism ofreactions and MSDS of chemicals.

Course (Paper) Name and No.: Organic Chemistry II PSC4IPR0

CO1 Define various terminologies related to IPR

CO2 Explain the role of law in the violation of IPR

CO3 Summarize the various models of cheminformatics

CO4 Apply the knowledge of cheminformatics to predict the properties of compounds, structures and drug designing

Practical's PSC4NPP0 & (PSC4IPP0 or PSC4RMP0)

CO1 Interpret spectral data like FT-IR, ^{13}C NMR, $^{1}HNMR$, UV-Visible spectrum and Mass spectrum for structure elucidation of organiccompound

CO2 Analyze the print and digital resources critically to formulate the research problem, argue and justify the statements

CO3 Apply the existing methodologies or develop a new methodology to address the research problem

CO4 Interpret the results and structures it to communicate via dissertation, and oral presentation by following ethical guidelines

Course (Paper) Name and No.: Organic Chemistry III PSC4RMT0

CO1 Explain the importance of different types of print and digital resources for gap analysis and data collection

CO2 Design/propose methodologies preferably with green and safe approach to conduct research

CO3 Analyze scientific data by statistical and graphical methods

CO4 Interpret the results and its communication through lab reports, research papers and oral presentations following ethical practices

Course (Paper) Name and No.: Organic Chemistry

CO1 Student will learn every aspect of publication of research paper such as terms associated with journal, referencing and library resources.

CO2 Student will get conversant with the methods of data analysis and various softwares employed for it.

CO3 Students will get knowledge of actual writing scientific papers.

CO4 Students will get information of the safety and ethical handling of chemicals

Project Evaluation

CO1 Student will actually get involved in research work.

CO2 Student will understand the analysis of data generated by their research work.

CO3 Student will learn how to present research work.

Department of Microbiology

Programme Specific Outcome:

PSO1 The program is aimed at equipping the students with basic knowledge in various branches of Microbiology such as Microbial Genetics, Molecular Biology, Virology, Medical Microbiology, Immunology, Microbial Biochemistry, Environmental Microbiology, Advances in Biotechnology and Industrial (food, pharmaceutical) Microbiology. Additionally, it also makes students aware of interdisciplinary sciences such as Bioinformatics and Bioinstrumentation

PSO2 At the end, student will have employability in food industry, pharmaceutical industry, Agricultural industry and fishery. Students will work as microbiologist in Research, QC, QA and production departments

PSO3 Students will develop basic understanding of the subject and will have developed life skills to solve environmental and hygiene related problems

Course Outcomes

Class: M. Sc. I Microbiology

Semester I

Course (Paper) Name and No.:I : Cell Biology

CO1 Define principles of membrane transport, ion channels, and electric properties of the membrane.,

CO2 Demonstrate the understanding of various microscopic techniques such as electron microscopy, confocal microscopy, phase contrast microscopy, etc. used for the study of cells.

CO3 Construct the various cell signaling pathways under different conditions.

CO4 Explain the mechanism and significance of Apoptosis in cell cycle.,

Course (Paper) Name and No.: II: Microbial Genetics

CO1 Explain the Post transcriptional modification

CO2 Distinguish the gene expression and its regulation found in both prokaryotic as well as eukaryotic cell

CO3 Explain the importance of DNA recombination and repair

CO4 Compare the difference between the cytoplasmic and genomic inheritance

Course (Paper) Name and No.: III: Microbial Biochemistry I

CO1 Solve problems based on expression of concentrations of solutions, pH, buffer capacity and ionic strength.

CO2 Recall structure, properties and functions of amino acids, proteins, lipids and glycoconjugates.

CO3 Illustrate the pathway for utilization of one-carbon compounds and two-carbon compounds.

CO4 Analyze processes of extracellular protein secretions and translocations of folded proteins.

Course (Paper) Name and No.: IV: Medical Microbiology &Immunology

CO1 Explain transmission, pathogenesis, and treatment of various infections of gastrointestinal, skin, and emerging infections.

CO2 Compare different epidemiological principles in disease prevention and control.

CO3 Justify the molecular basis of immunoglobulin diversity, physiological and immunological barriers in adaptive and innate immune response.

CO4 Discuss immune response to bacterial and viral infections & methods of evasion of immune response by pathogens.

Semester II

Course (Paper) Name and No.:I: Virology

CO1 Explain the life cycles of pathogenic animal viruses including influenza; hepatitis B; herpes simplex; varicella-zoster;smallpox etc.

CO2 Determine the factors contributing to the pathogenesis of viruses

CO3 Clarify the different types of plant viruses causing plant diseases

CO4 Distinguish the structure and replication cycle of T4 and T7 phage

Course (Paper) Name and No.:II: Microbial Genetics-II

CO1 Demonstrate the role of physical and chemical mutagens using replica plate technique

CO2 Compare between the Southern & Northern blotting

CO3 Test the potential chemicals for mutagenesis by Ame's method

CO4 Design a primer for DNA amplification

Course (Paper) Name and No.: III: Microbial Biochemistry II

CO1 Outline the procedures involving estimation of biomolecules

CO2 Prepare buffers of different strengths

CO3 Identify the lipid molecules after extraction

CO4 Determine the pK & pI value of amino acids

Course (Paper) Name and No.: IV: Medical Microbiology & Immunology

CO1 Identify/detect the presence of pathogens in specimens

CO2 Demonstrate the understanding of blood compatibility procedures

CO3 Use suitable rapid detection methods for identifying pathogens

CO4 Compose a write up on the topic of clinical trials.

Class: M. Sc. II Microbiology

Semester III

Course (Paper) Name and No.:I: Research Methodology

CO1 Demonstrate understanding of research methodology.

CO2 Design hypothesis and methods of data collection.

CO3 Differentiate between different types of sampling and variables.

CO4 Demonstrate understanding of data analysis and report writing.

Course (Paper) Name and No.:II: Food Microbiology

CO1 Explain the importance and sources of microorganisms in food

CO2 Analyze qualitative and quantitative microbial testing of food sample

CO3 Summarize the food quality parameters by using HAACCP, QA and QC

CO4 Explain general production methods of fermented food like Cheese, Sausage, Pickles etc.

Course (Paper) Name and No.:III: Advances in Biotechnology

CO1 Describe plant tissue culture techniques, for developing transgenic plants. By using vectors & selectable markers.

CO2 Explain the concepts of animal tissue culture to construct transgenic animals which has better yielding capacity.

CO3 Differentiate between different methods for synthesis of nanoparticles and application of nanoparticles in the field of diagnostic and medicine.

CO4 Define concepts of pharmacogenomics, pharmacokinetics, and tissue engineering, prenatal , pre-implantation diagnosis, gene therapy and antisense technology in treatment of genetic diseases

Course (Paper) Name and No.: IV: Applied &Environment Microbiology

CO1	Illustrate the events of soil, marine and agricultural microbiology
CO2	Apply physiological and molecular techniques in microbial ecology studies
CO3	Analyze the water and food samples as a part of quality check
CO4	Construct knowledge on biotechnological application of extreme proteins

Semester IV

Course (Paper) Name and No.: Tools and Techniques: Bio-molecular Analysis

CO1 Construct the flow diagrams of spectroscopic techniques.

CO2 Compare between Gas chromatography and High-performance liquid chromatography

CO3 Explain molecular biology techniques such as PCR variations, Hybridization array technology, and FISH

CO4 Demonstrate the use of Microscopy, diffraction techniques and photoluminescence spectroscopy in nanotechnology studies.

Course (Paper) Name and No.: Pharmaceutical Microbiology

CO1 Explain the importance of QA, QC, and GMP aspects in the pharmaceutical industry.

CO2 Describe the importance of quality control and documentation in the pharmaceutical industry.

CO3 Analyse various validation and calibration methods used in the cosmetic industry.

CO4 Apply modern methods to test newly discovered drugs

Course (Paper) Name and No.: Advances in Biotechnology

CO1 Compare different downstream processing techniques for production of therapeutic compounds, and new methods for vaccine production and drug discovery.

CO2 Describe concepts of IPR and Bioethics in field of biotechnology,

CO3 Develop different methods for extraction of bioactive compounds from marine environment & its application in various fields.

CO4 Explain synthesis of DNA by different chemical and molecular methods, expression of protein in prokaryotic and eukaryotic expression host.

Course (Paper) Name and No.: Applied &Environment Monitoring & Management

CO1	Apply knowledge on management of natural resources and safety standards
CO2	Evaluate the issues related pollution and its management
CO3	Construct strategies to eradicate biofilm from different environments
CO4	Design strategies of bioremediation for field application

Department of Biotechnology

Programme Outcome

PSO1 Courses will provide integrated knowledge of biochemistry, cell biology and immunology with details of protein folding, protein targeting, and regulation of metabolic pathways, bio-membranes, cell signaling, vaccinology, immunological techniques and Animal Models.

PSO2 Students will develop understanding of history, theoretical basis, of latest technologies in area of biotechnology.

PSO3 On completion of course, students should be able to gain basic skills in plant and animal biotechnology.

PSO4 Students will get conceptual exposure of computational, biostatical and bioinformatics tools.

PSO5 Course will provide integrated knowledge of operations of various fermenters and important microbial/enzymatic industrial processes in food and fuel industry. It will also provide knowledge on intellectual property rights and their implications in biological research and product development

PSO6 Courses will provide integrated knowledge and broad perspectives of various pandemics diseases and emerging pathogens. Students will be familiar with the basic concepts and significance of Biologics/Biosimilar, principles and the applications of enzyme technology with enzyme purification techniques.

PSO7 Students will develop understanding about Health hazards of pollution and waste, solid waste management, biodiversity concepts and data management and environmental monitoring.

PSO8 Students will be able to understand the basic science behind the properties of nanomaterials synthesis and applications of nanomaterials.

PSO9 Students will get knowledge of the emerging fields of OMICS and Systems Biology, biological systems as a whole and how parts of systems interact with each other and their applications for screening, testing and treatment of human diseases.

PSO10 Students will have a firm foundation in Drug Discovery and Clinical Studies along with detail information of Clinical Trial Design and Indian Regulations, Pharmacovigilance and Clinical Data Science.

PSO11 Students will develop skills for the processing and analysis of scientific data along with knowledge of techniques used Food Technology - Nutraceuticals

Course Outcomes

Class: M.Sc. I Biotechnology

Semester I

Course (Paper) Name and No.: Biochemistry Paper-I

CO1 Students will gain fundamental knowledge in biochemistry.

CO2 Students will understand the molecular basis of various pathological conditions from the perspective of biochemical reactions.

CO3 Students will develop a deep understanding of concepts like glycosylation, folding and degradation of proteins, regulation of metabolic pathways, cell structure, cell division and molecular basis of various cellular processes

CO4 Students will learn chemistry of nucleic acids with regulation of metabolic pathways.

Course (Paper) Name and No.: Immunology Paper-II

CO1 Students will gain education in Immunology, molecular Diagnostics and developmental biology

CO2 Students will get an idea of defense mechanism and diagnosis of infectious diseases with essential concepts of differentiation and growth in animals.

CO3 Evaluate usefulness of immunology in different pharmaceutical company.

CO4 Students will get the knowledge of different immunological techniques.

Course (Paper) Name and No.: Cell Biology Paper-III

CO1 Students will learn signal transduction mechanisms, in particular the concepts of response specificity, signal amplitude & duration, signal integration and intracellular location

CO2 Students will get knowledge of different types of extracellular signals and receptors, and explain their functional significance

CO3 The students will able to learn how genetics contributes to predisposition and progression of cancer.

CO4 It will help the students to understand how immunotherapy is, and can be, used to treat human illness.

Course (Paper)Name and No.: Genomics and Emerging Technologies - Paper-IV

CO1 Students will be able to acquire knowledge and understanding of fundamentals of genomics, proteomics, transcriptomics and metabolomics with their applications in various applied areas of biology.

CO2 Students will be able to learn history, theoretical basis, and basic understanding of latest technologies in area of biotechnology.

CO3 They will also be able to learn about various applications of emerging techniques used in genomics, proteomics.

CO4 Students will get knowledge of molecular cytogenetics including advanced fluorescence techniques and CRISPER CAS

Class: M.Sc. I Biotechnology

Semester II

Course (Paper) Name and No.: Bioinformatics and Biostatistics – Paper-I

CO1 Students will be acquainted to organization of various databases.

CO2 Students will be able to analyze, interpret and study biological data (sequence, structure, etc.) stored in various databases available on internet.

CO3 Biostatistics & Computational Biology will enrich the students how to utilize various tools of biostatics in interpretation of biological data, different sampling methods including probability, correlation and regression.

CO4 To Gain broad understanding in statistics and approach to problem solving, on a diverse variety of disciplines. To Gain working knowledge of these computational tools and methods.

Course (Paper) Name and No.: Plant and Animal Biotechnology –Paper II

CO1 Gain basic skills in plant and animal biotechnology.

CO2 Learn basic technical aspects of plant tissue culture technique like media preparation, seed sterilization, callus culture and maintenance of aseptic conditions. The skill could be applied in agriculture and crop improvement.

CO3 Learn to demonstrate foundational knowledge of Cell culture techniques and competence in laboratory technique

CO4 Students will learn molecular mapping, marker assisted selection and plant genetic manipulations including strategies for introducing biotic and abiotic stress resistance

Course (Paper) Name and No.: Bioprocess Engineering and Technology- Paper III

CO1 Appreciate relevance of microorganisms from industrial context.

CO2 Give an account of design and operations of various fermenters.

CO3 Give an account of important microbial/enzymatic industrial processes in food and fuel industry

CO4 Students will learn about fermented foods and beverages with knowledge of Food additives and supplements

Course (Paper) Name and No.: Intellectual Property Rights & Bioethics–Paper IV

CO1 Understand the rationale for and against IPR and especially patents;

CO2 Understand why India has adopted an IPR Policy and be familiar with broad outline of patent regulations;

CO3 Gain knowledge of biosafety and risk assessment of products derived from recombinant DNA research and environmental release of genetically modified organisms, national and international regulations

CO4 Students will become familiar with ethical issues in biological research.

Class: M.Sc. II Biotechnology

Semester III

Course (Paper) Name and No.: Applied Virology and Microbiology- Paper- I

CO1 Students will learn theoretical knowledge of various diseases condition, causative agents, history, diagnosis & clinical manifestation.

CO2 Students will develop understanding about epidemiological principles in prevention, control and management of pandemic disease and emerging pathogens.

CO3 Students will become aware of organizations in disease control & research and also current research and developments in various diseases with understanding of antimicrobial resistance for management of drug resistance in population

CO4 Students will get to know about the characteristics of biofilms formed due to different infectious agents and get insights into latest development of diagnostics & therapeutics for such diseases.

Course (Paper) Name and No.: Environmental Biotechnology- Paper-II

CO1 Students will learn the use of microorganisms and their products in the prevention of environmental pollution through biotreatment of solid, liquid, and gaseous wastes

CO2 Students will get introduced to latest concepts in environmental biotechnology, various types of pollutions, monitoring, latest mitigation strategies and management of the same using microbiological, molecular and analytical methods

CO3 Students will develop understanding about Health hazards of pollution and waste, solid waste management.

CO4 Students will be able to understand biodiversity concepts and data management, biosensors and its application in environmental monitoring.

Course Name and No.: Biologics and Regulatory Affairs- Paper- III

CO1 Student will gain essential knowledge about Clinical and Biopharmaceutical Development along with the basic concepts and significance of Biologics/Biosimilar in addition to having knowledge about its therapeutic applications

CO2 Students will be aware of the techniques required for characterization of the Biosimilars relative to the Reference Biologics.

CO3 Students will know about the regulatory aspects of approval of a Biosimilars.

CO4 Students will have the knowledge of applications of systems biology in development of personalized medicine, drug development

Course Name and No.: Molecular Enzymology and Enzyme Technology- Paper- IV

CO1 Students will gain basic knowledge of mechanism of action, enzyme kinetics – factors affecting enzyme activity, regulation of enzyme activity & enzyme pattern in diseases.

CO2 Students will develop understanding regarding techniques and the underlying principle in enzyme purification and enzyme engineering.

CO3 Students will be able to integrate the practical aspects of Industrial application of enzymes.

CO4 Students will understand the role of Enzymes in diagnosis of diseases, therapeutic uses and as biosensors.

Class: M.Sc. II Biotechnology

Semester IV

Course (Paper) Name and No.: Nanobiotechnology- Paper- I

CO1 Students will gain the knowledge about Synthesis of nanometer scale materials.

CO2 Students will be able to understand the basic science behind the properties of nano-materials and the principles behind advanced experimental techniques for studying nano-materials.

CO3 Student will acquire knowledge on biomedical applications as well as toxicology studies of nanotechnology.

CO4 Students will get an insight into complete systems where nanotechnology can be used to improve our everyday life.

Course (Paper) Name and No.: Omics and Systems Biology- Paper- II

CO1 Students will understand how the data is generated by OMICS technologies to contribute to different databases along with screening, testing and treatment of human diseases

CO2 Students will Understand, compare and contrast the techniques involved in Genomics, Proteomics, Transcriptomics, Lipidomics and Metabolomics.

CO3 Students will gain the knowledge of advanced genomic and proteomic technologies and their data from high-quality human bio-specimens to identify potentially actionable therapeutic molecular targets.

CO4 Students will have the knowledge of applications of systems biology in development of personalized medicine, drug development

Course (Paper) Name and No.: Drug Discovery and Clinical Study- Paper- III

CO1 Students will have a firm foundation in Drug Discovery and Clinical Studies.

CO2 Students will able to learn about drug discovery-design pathway using some in-silico tools.

CO3 Students will be able to understand the clinical trial design set up

CO4 Students will gain information on rules-regulation and responsibilities in clinical studies.

Course (Paper) Name and No.: Scientific Writing and Food Biotechnology- Paper- IV

CO1 The course impart knowledge about the Guidelines for Medical writing & Plagiarism.

CO2 Students will understand about Presentation skills & Research ethics

CO3 Students will able to think critically, organize and analyze scientific data.

CO4 Students will be able to present their research results in the format of oral or poster presentations at conferences, to write scientific publications (theses, articles) and to prepare applications for scientific grants (research proposals).

Department of Computer Science

Programme Specific Outcome

PSO1 Learners will be able to communicate computer science concepts, designs, and solutions effectively and professionally.

PSO2 Able to Identify, analyse and synthesize scholarly literature relating to the field of computer science.

PSO3 Gain knowledge of computing to produce effective designs and solutions for specific problems.

PSO4 Promotes research oriented activity through different subjects

Course Outcomes

Class: M.Sc. I (Computer Science)

Semester I

Course (Paper) Name and No.: P-I, Analysis of Algorithms and Researching Computing PCS1ARC

CO1 Describe detailed design strategies of the algorithm

CO2 Illustrate various advanced design and analysis techniques

CO3 Analyze Number- Theoretic algorithms to solve NP-completeness problems

CO4 Elaborate the ideas of research

Course (Paper) Name and No.: P-II, Advanced Networking Concepts PCS2DMC

CO1 Explain step by step transformation of source code to target code.

CO2 Describe the Phases of Compiler.

CO3 Explain Methods for Code Optimization

CO4 Evaluate data flow, logic flow, liveness of variables through the program

Course (Paper) Name and No.: P III, Advanced Database Systems PCS1ADS

CO1 Describe the concept of distributed database systems.

CO2 Analyse database management in a centralized and distributed environment.

CO3 Illustrate data modelling and database development processes for object-oriented ,Temporal, and Spatial databases.

CO4 Explain the use of deductive,active, and multimedia databases

Course (Paper) Name and No.: P-IV, Robotics and Artificial Intelligence PCS1RBT

CO1 Describe the concepts of robotics and its components.

CO2 Analyze the internal and external perceptions of the robot based on different types of sensors.

CO3 Evaluate the planning, mapping, and navigation of robots.

CO4 Identify appropriate AI methods to solve a given problem

Course: Practical's of PCS1ARC+ PCS1DMC Course Code: PCS1PPR1

CO1	Develop programs for the implementation of different algorithms.
CO2	Evaluate time and space complexity for an algorithm
CO3	Design Structure of Compilers
CO4	Apply the basic concepts and methods of Compiler Design

Course: Practical's of PCS1ADS+PCS1RBT Course Code: PCS1PPR2

CO1	Create a database using XML attributes and elements
CO2	Create spatial and temporal database and apply queries on it
CO3	Design a robot using different physical components
CO4	Test AI searching algorithms for real world problems

Semester II

Course (Paper) Name and No.: P-I, : Cloud Computing PCS2CLD

CO1 Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing

CO2 Implement different types of Service Oriented Architecture systems

CO3 Identify problems, and explain, analyze, and evaluate various cloud computing platforms for the solution

CO4 Analyze the issues in Resource provisioning and Security governance in clouds

Course (Paper) Name and No.: P-II Natural Language Processing PCS2NLP

CO1 Understand the mathematical and linguistic foundations underlying approaches to the various areas in NLP

CO2 Understand the field of natural language processing.

CO3 Apply NLP techniques to design real-world NLP applications such as machine translation, text categorization, text summarization, information extraction, etc.

CO4 Model linguistic phenomena with formal grammar

Course: Business Intelligence and Big Data Analytics Course Code: PCS2BI1

CO1 Describe the concepts of Business Intelligence

CO2 Explain business Data Warehouse

CO3 Build business Data Warehouse

CO4 Evaluate data mining process and Association analysis

Course: Machine Intelligence Course Code: PCS2ML1

CO1 Identify basic concepts and types of learning from data.

CO2 Describe dimensionality reduction technique for attribute reduction.

CO3 Create ensemble models using different Machine Learning techniques.

CO4 Build probabilistic and unsupervised learning models for handling unknown pattern

Course: Practical's of CLD and NLP Course Code: PCS2PPR1

CO1 Design & develop backup strategies for cloud data based on features

CO2 Develop an application to create dimension tables in a cube and generate star schema , and snowflake schema

CO3 Apply NLP techniques to design real-world NLP applications such as machine translation, text categorization, text summarization, information extraction, etc.

CO4 Model linguistic phenomena with formal grammar

Course: Practical's BI1 and ML1 Course Code: PCS2PPR2

CO1 Evaluate data mining process and Association analysis

CO2 Build business Data Warehouse

CO3 Construct a regression and classification model using different algorithms

CO4 Construct Ensemble Model using Bootstrap technique

Class: M.Sc. II (Computer Science)

Semester III

Course (Paper) Name and No.: P-I, Ubiquitous Computing PCS3UBC

CO1 Describe the characteristics of pervasive computing applications

CO2 Analyze the strengths, problems and limitations of the current tools, devices and communications for pervasive computing systems.

CO3 Identify the different ways that humans will interact with systems in a ubiquitous environment

CO4 List and exemplify the key technologies involved in the development Ubicomp systems

Course (Paper) Name and No.: P-II, Social Network Analysis PCS3SNA

CO1 Describe the concept of Social Network Analysis

CO2 Analyze centrality and centralization in Social Network Analysis

CO3 Apply similarity measures and equivalence concepts in Social Network Analysis

CO4 Design two mode social networks

Course (Paper) Name and No.: Elective I- Track A: Cloud Computing -II PCS3CL2

CO1 Describe different characteristics of public, private and hybrid cloud deployment models

CO2 Choose various cloud technologies for building applications.

CO3 Analyze different types of Virtualization and service Oriented Architecture systems.

CO4 Analyze the cloud security issues

Course (Paper) Name and No.: Elective I- Track B: Cyber and Information Security II PCS3CI2

CO1	Explain the fundamentals concepts of computer forensics
CO2	Analyze computer forensic methods for data recovery, evidence collection, and data seizure
CO3	Develop different Security System for data and network
CO4	Illustrate procedure of network and mobile forensics
CO5	Explain the fundamentals concepts of computer forensics

Course (Paper) Name and No.: Elective II- Track C: Business Intelligence and Big Data Analytics –II (Mining Massive Data sets) PCS3BI2

CO1	Apply preprocessing techniques on Big data
CO2	Apply relational algebra, matrix operations using map reduce
CO3	Analyze similarity and hashing concepts of documents
CO4	Evaluate stream concepts like sampling, filtering, estimating moments etc.

Course (Paper) Name and No.: Elective II - Track D, Machine Learning –II PCS3AML

CO1	Acquire point estimation techniques for estimating parameters of machine learning models
CO2	Analyze advanced Machine Learning techniques for classification
CO3	Compare different sampling techniques
CO4	Construct directed acyclic graph

Course: Practical's of PCS3UBI and PCS3SNA Course Code: PCS3PPR1

CO1	Develop an attitude to identify and propose solutions for security and privacy issues.
CO2	Design Android security application
CO3	Demonstrate various types of measures for Social Networks
CO4	Design sociogram for person-by-person network

Course: Practical's of PCS3CL2/ PCS3CI2 + PCS3BI2/ PCS3ML2 Course Code: PCS3PPR2

CO1	Build an application on a private cloud.
CO2	Develop FOSS-Cloud functionality using cloud services
CO3	Analyze evidences and disk image of data from forensic tools
CO4	Solve Investigation Case using Forensic tool.
CO5	Apply various probability functions for standard statistical distributions
CO6	Develop a program for implementation of map reduction techniques and shingles for a given data set

Semester IV

Course (Paper) Name and No.: P-I, Simulation and Modelling PC4SIM

CO1	Describe basic concepts of simulation models
CO2	Apply verification and validation on simulation models
CO3	Analyze various types of simulation models
CO4	Design state-based behaviour of simulation

Course: Cloud Computing-III(Building Clouds and Services) Course Code: PCS4CL3

CO1	Describe specialised Cloud mechanism
CO2	Analyse Cloud Computing Software architecture
CO3	Acquire the knowledge about Virtualization concepts
CO4	Design real time monitoring mechanism for building private cloud

Course: Cyber and Information Security-II(Cryptography and Cryptanalysis) Course Code: PCS4CI3

CO1	Analyze Particular information and network security Problems
CO2	Identify generic security threats and Vulnerabilities
CO3	Assess and Apply various cryptographic techniques
CO4	Implement security solutions for confidentiality, Authentication and privacy

Course: Business Intelligence and Big Data Analytics-III(Intelligent Data Analysis)

Course Code: PCS4BI3

CO1	Explain various strategies of Clustering
CO2	Identify various algorithms for particular class of problems
CO3	Apply dimensionality reduction techniques
CO4	Explain the concepts of link analysis and recommendation systems

Course: Machine Learning-III (Computational Intelligence) Course Code: PCS4ML3

CO1	Describe the basic concepts of ANN
CO2	Compare different types of evolutionary computation strategies
CO3	Discuss various approaches of Swarm Intelligence
CO4	Develop a rule based system using Fuzzy logic.

Course: Practical's of Simulation & Modelling and Specialization Course Code: PCS4PPR1

CO1	Design and develop agent based and system dynamics models.
CO2	Develop Cloud computing services using cloud tools
CO3	Apply clustering , hierarchical and density based algorithms to the given data set
CO4	Design recommendation system
CO5	Apply Evolutionary, Neural Network and optimization algorithms to the given data set
CO6	Develop Cryptographic Techniques to secure data
CO7	Apply Public Cryptosystem to encrypt and decrypt data

Course: Internship with Industry Course Code: PCS4PPR2

CO1	Assess interests and abilities in their field of study.
CO2	Develop work habits and attitudes necessary for job success.
CO3	Develop communication, interpersonal and other critical skills in the job interview process.

Course: Project Implementation Course Code: PCS4PPR3

CO1	Analyse data and synthesize research findings
CO2	Demonstrate an understanding of the ethical issues associated with practitioner research
CO3	Improve engagement in recent research areas of industry

Department of Information Technology

Programme Specific Outcome

PSO1 Enter new problem areas that require an analytic and innovative approach.

PSO2 Get some development experience within a specific field of Information Technology, through project work.

PSO3 Get the ability to apply knowledge of Information Technology to real-world issues.

PSO4 Apply advanced theoretical and practical methods gained from various courses.

PSO5 Develop and renew Information Technology competence.

Course Outcomes

Class: M.Sc. I Information Technology

Semester I

Course (Paper) Name and No.: P-I, Research in Computing

CO1 Learners will be able to describe real world problems with scientific approach

CO2 Learners will be able to define analytical skills by applying scientific methods.

CO3 Learners will be able to recognize and apply the language, theory and models of the field of business analytics.

CO4 Learners will be able to focus on ability to critically analyze, synthesize and solve complex unstructured business problems

CO5 Learners will be able to define and critically apply the concepts and methods of business analytics.

Course (Paper) Name and No.: P-II, Data Science

CO1 Learners will be able to distinguish and correlate ethical issues in business related to intellectual property, data security, integrity, and privacy.

CO2 Learners will be able to develop ethical practices in everyday business activities and make well-reasoned ethical business and data management decisions.

CO3 Learners will be able to demonstrate knowledge of statistical data analysis techniques utilized in business decision making.

CO4 Learners will be able to apply principles of Data Science to the analysis of business problems.

CO5 Learners will be able to evaluate the use of teamwork, leadership skills, decision making and organization theory.

Course (Paper) Name and No.: P III, Cloud Computing

CO1 Learners will be able to analyze the Cloud computing setup with its vulnerabilities and applications using different architectures.

CO2 Learners will be able to design different workflows according to requirements and apply map reduce programming model.

CO3 Learners will be able to apply and design suitable Virtualization concepts, Cloud Resource Management and design scheduling algorithms.

CO4 Learners will be able to create combinatorial auctions for cloud resources and design scheduling algorithms for computing clouds.

CO5 Learners will be able to assess cloud Storage systems and Cloud security, the risks involved, its impact and develop cloud application.

Course (Paper) Name and No.: P-IV, Soft Computing Techniques

CO1 Learners will be able to identify and describe soft computing techniques and their roles in building intelligent machines.

CO2 Learners will be able to recognize the feasibility of establishing a soft computing methodology for a particular problem.

CO3 Learners will be able to apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems.

CO4 Learners will be able to operate genetic algorithms to combinatorial optimization problems.

CO5 Learners will be able to evaluate and compare solutions by various soft computing approaches for a given problem.

Semester II

Course (Paper) Name and No.: P-I, Big Data Analytics

CO1 Learners will be able to identify the key issues in big data management and its associated applications in intelligent business and scientific computing.

CO2 Learners will be able to compute fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics.

CO3 Learners will be able to determine business models and scientific computing paradigms, and apply software tools for big data analytics.

CO4 Learners will be able to adapt adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.

Course (Paper) Name and No.: P-II Modern Networking

CO1 Learners will be able to define and describe in-depth knowledge in the area of Computer Networking.

CO2 Learners will be able to examine scholarship of knowledge through performing in a group to identify, formulate and solve a problem related to Computer Networks.

CO3 Learners will be able to prepare a technical document for the identified Networking System Conducting experiments.

CO4 Learners will be able to analyze the identified research work in building Computer Networks.

Course (Paper) Name and No.: P-III Cloud Computing and Ubiquitous System

CO1 Learners will be able to develop web applications using Model View Control. Create MVC Models and write code that implements business logic within Model methods, properties, and events

CO2 Learners will be able to create views in an MVC application that display and edit data and interact with Models and Controllers

CO3 Learners will be able to discover the philosophy and architecture of .NET.

CO4 Learners will be able to describe core packages, .net packages and frameworks.

CO5 Learners will be able to develop a working knowledge of the .NET programming model.

Course (Paper) Name and No.: P-IV Image Processing

CO1 Learners will be able to describe the relevant aspects of digital image representation and their practical implications.

CO2 Learners will be able to design point wise intensity transformations to meet stated specifications

CO3 Learners will be able to discover 2-D convolution, the 2-D DFT, and have the ability to design systems using these concepts

CO4 Learners will be able to express a command of basic image restoration techniques

CO5 Learners will be able to generalize the role of alternative color spaces, and the design requirements leading to choices of color space

Class: M.Sc. II Information Technology

Semester III

Course (Paper) Name and No.: P-I, Embedded system

CO1 Learners will be able design, describe, validate and optimize embedded electronic systems in different industrial application areas.

CO2 Learners will be able define hardware and software communication and control requirements.

CO3 Learners will be able to acquire knowledge of and be able to use tools for the development and debugging of programs implemented on microcontrollers and DSPs.

CO4 Learners will be able to design electronic circuits for the processing of information in communications and control systems.

CO5 Learners will be able to acquire knowledge of sensor properties and apply these in the design of Electronic systems which integrate measurement and actuation in different industrial production contexts.

Course (Paper) Name and No.: P-II, Information Security Management

CO1 Learners will be able to discover potential problems before they occur so that risk-handling activities may be planned and invoked as needed across life of product or project to mitigate adverse impacts on achieving objectives with Risk management

CO2 Learners will be able to construct a basic level of security, independent of external requirements so they can maintain the uninterrupted operation of the IT organization.

CO3 Learners will be able to describe key management which is the process of administering or managing cryptographic keys for a cryptosystem.

CO4 Learners will be to analyze the risks or threats to the success of the plan and test the controls in place to determine whether or not those risks are acceptable.

CO5 Learners will be able to summarize the basic process of identifying, preserving, analyzing and presenting the digital evidence in such a manner that the evidences are legally acceptable

Course (Paper) Name and No.: P-III, Virtualization

CO1	Learners will be able to identify basics of virtualization and types of virtualization.
CO2	Learners will be able to describe different server virtualization platforms and its uses
CO3	Learners will be able to construct an Enterprise network using network virtualization
CO4	Learners will be able to explain various storage types in virtualization
CO5	Learners will be able to explain Blade servers and its working

Course (Paper) Name and No.: P-IV, Ethical Hacking

CO1	Learners will able to describe the basics of ethical hacking and its phases.
CO2	Learners will able to explain how to hack systems & protect systems from Trojans, Backdoors, Virus & worms
CO3	Learners will able to compare methods of hacking.
CO4	Learners will able to discover how to hack web applications, wireless networks, mobile platforms ethically and techniques like SQL injection
CO5	Learners will able to identify ethical hacking techniques and tools.

Semester IV

Course (Paper) Name and No.: P-I, Artificial Intelligence

CO1	Learners will able to determine knowledge of the building blocks of AI as presented in terms of intelligent agents.
CO2	Learners will able to apply basic principles of AI in solutions that require problem solving
CO3	Learners will able to formulate and solve problems with uncertain information using Bayesian approaches.
CO4	Learners will able to define basic concepts in Artificial Intelligence
CO5	Learners will able to develop simple programs in Prolog Programming

Course (Paper) Name and No.: P-II, IT Infrastructure Management

CO1 Learners will able to describe development of service concepts in preparation for the selection of services to be provided.

CO2 Learners will able to discuss profitable services that provide a high level of quality to satisfy the business needs.

CO3 Learners will able to discover any potential risk and provide measures to overcome its impact on other services and business.

CO4 Learners will able to explain IT service operations used to ensure that the required IT services are delivered efficiently and effectively as per the service level agreements to the business users and customers.

CO5 Learners will able to consider continuously improving the service quality after the service has been put into operation.

Course (Paper) Name and No.: P-III, Computer Forensics

CO1 Learn Basics about Computer Forensics

CO2 Learn about processing crimes and how to use latest technology

CO3 Lear about Macintosh OS and other forensic analysis techniques.

CO4 Learn about Virtual Machines and network forensics

CO5 Learn how to write report and give expert testimony

Course (Paper) Name and No.: P-IV, Cloud Management

CO1 Learners would be able to explain virtualized data center and cloud infrastructures.

CO2 Learners would be able to explain storage network designs.

CO3 Learners would be able to describe system center 2012 Infrastructure.

CO4 Learners would be able to develop and maintain System center 2012 with configuration manager 2012.

CO5 Learners should be able to apply monitoring in System center 2012.

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