

UG & PG COURSE OUTCOMES

ENGLISH COURSE OUTCOMES

COURSE OUTCOME : modern language (english) - cbc

I BA Semester I : Introduction to English Language and Literature

Upon completion of the course the students will be able to:

1. To know the beauty of the coherence of Language and Literature
2. To demonstrate the awareness of evolution theory of language by varied culture
3. To study the formation of new words
4. To apply literary terminology for Narrative, Poetic and Dramatic genres
5. To explore literary elements
6. To identify and use the figures of speech
7. To appreciate literary form and structure in shaping a text's meaning

COURSE OUTCOME : Modern Language (English) - CBCS

I BA Semester II : Poetry from 16th -20th Century

Upon completion of the course the students will be able to:

1. To recognize poetry from a variety of cultures, languages and historic periods
2. To understand and appreciate poetry as a literary art form
3. To analyze the various elements of poetry, such as diction, tone, form, genre, imagery, figures of speech, symbolism, theme, etc.
4. To help the students to improve their understanding of the world the poets lived in
5. To recognize the rhythms, metrics and other musical aspects of poetry
6. To apply the principles of literary criticism to the analysis of poetry
7. To broaden their vocabularies and to develop an appreciation of language
8. To kindle their critical thinking skills
9. To inculcate a deeper appreciation of cultural diversity by introducing them to poetry from a variety of cultures throughout the world
10. To enhance their own creativity and writing skills

COURSE OUTCOME : Modern Language (English) - CBCS

II BA Semester III : Types of Drama

Upon completion of the course the students will be able to:

1. Interpret literary texts in English by nurturing and utilizing their ability to understand drama in a skilled, knowledgeable, and ethical manner.
2. Conceptualize various types of drama viz. Tragedy, Comedy, Farce, Melodrama, Historical Plays through the prescribed texts and analyze the effect they create in the audience or readers.
3. Gain knowledge in the development of English drama from 16th Century to 21st century viz. Shakespearean drama, Sentimental Comedy, Romantic Comedy, Shavian plays and One-act plays
4. Understand the structure of a play and learn the dramatic devices used in writing a play
5. Become well acquainted with the rhetorical aspect of Drama, historical contexts and psycho-social aspects.
6. Develop reading, writing and analytical skills and communicate their ideas critically, creatively, and persuasively through the medium of language in the current information-intensive society.
7. Raise significant questions, gather relevant evidence, reach well-reasoned conclusions, weigh alternative systems of thought, and write as means of intellectual inquiry and creative expression.
8. Discern the various cultural and moral values associated with the texts which help them to become ethical communicators.

COURSE OUTCOME: Modern Language (English) - CBCS

Semester IV: English Fiction

Upon completion of the course the students will be able to:

1. Conceptualize the Genre of Novel and its types viz. Allegorical, Gothic, Historical, Epistolary, Picaresque, and Psychological.
2. Gain knowledge in the development of English Fiction from the 17th Century to the 21st century – from man's physical adventures to social and psychological journeys.
3. Learn the elements of fiction – Narrative Technique, Setting, Point of view, Style and Detective fiction.

4. Become well acquainted with the literary genre of Novel and Short Story and literary devices of allegory and metaphor, satire, and stream of consciousness technique
5. Enhance Reading skills and understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.
6. Understand the social, historical and political backgrounds of the world of the novelists and short story writers through the elaborate and allegorical descriptions in the prescribed novels.
7. Get a wide exposure of eminent writers like George Orwell, Jane Austen and Daniel Defoe, Rudyard Kipling and Sir Arthur Conan Doyle's creation –the famous Sherlock Holmes. Their unique styles of writing and imagination help to enhance their creative writing skills.

COURSE OUTCOMES: Modern Language (English)

III BA – Semester V (Core 5) Modern Language English Paper V : Modern Indian Literature

Upon completion of the course the students will be able to:

1. Broadens the origin of English education during British Empire in India.
2. Focuses on the role of English during freedom struggle
3. Analyses the cause for the decline of the British colonies
4. Emphasizes on the emergence and importance of Dalit Literature in India
5. Highlights the glory of Indian writings in English
6. Inculcate the essence of the Hindi writings/Indian Literature in English

Paper VI A : Discipline Centric Elective - 1A Contemporary World Literature

Upon completion of the course the students will be able to:

1. Defines and introduces the background of war poetry
2. Instructs the features of Post – modernism
3. Helps a study on Theatre of the Absurd and Globalization
4. Inculcate interests to focus on worried contemporary literature
5. Deepens the knowledge of contemporary world culture through literature

6. Ignites the minds to compare the glory of Indian writings with other writings
7. Focuses on the vocabulary of culture and society
8. Enhances aesthetic sense – admiring the beauty of life and literature
9. Offers a platform for communicative skills to choose alternative careers like content writing, film making, theatre arts etc.,

Semester VI (Core 6) Modern Language – English Paper VII : American Literature

Upon completion of the course the students will be able to:

1. Instills the background of civil war and Trancendentalism.
2. Emphasizes on the meaning and the significance of American Dream, then and now
3. Aids to comprehend the effects of racism
4. Extends an opportunity to study a brief history American Literature – Poetry, Drama and Fiction
5. Paves way to know the life, culture language and society through literature
6. Kindles to compare American writings with Indian writings with English
7. Inculcates interests among youth to study abroad, the need of the hour

Semester VI Paper VIII B : Discipline Centric Elective – 2 A Literary Criticism and Theory

Upon completion of the course the students will be able to:

1. Introduces to the basics of Literary Criticism
2. Widens the knowledge of literary and focuses on their importance
3. Helps to write a critical appreciation
4. Provides an insight of practical criticism
5. Ingrains the mind towards creative writing, appreciation, critical thinking and critical analysis
6. Accentuates expression of thoughts and views for critical appreciation and judgmental reviews
7. Enhances fluency of languages, presentation skills and creative writing.

SOCIAL SCIENCES COURSE OUTCOMES

ECONOMICS-MICRO –ECONOMICS- 1 (B.A I Year SEM-I)

Upon completion of Micro economics, students should be able to

1. Revising and make them remember the basics of economics.
2. To Understand the Methodology in economics.
3. Apply of economic theories in day to day life.
4. To analyze the appropriate behavior of consumers and methods of decision making.
5. To evaluate the production costs and consumer behavioral theories and its relevance.
6. They will also compare and contrast consumer behavior during shopping experiences leading to creative thinking.
7. Finally having understood the fundamentals, comprehend the theory applying to the real life situations, also propose new phenomenon through creative thinking.

MACRO –ECONOMICS (B.A I Year SEM –II)

Upon completion of Macro - economics, students should be able to:

1. Students will get exposed to various Macro- economic terminologies- N.I, Inflation, Unemployment, Trade cycles etc.
2. They will also understand various macro- economic theories with historical perspective.
3. Students will be able to apply various macro- economic theories to understand the health of the economy through various economic indicators.
4. Students will analyze, compare and contrast various macro- economic theories with specific reference to Indian context.
5. Students will evaluate and judge the existing policies of the government and their relevance.
6. Having understood the various policies critically it can pave way to think for new economic policies

MICRO –ECONOMICS- 1

(B.A II Year SEM -III)

Upon completion of Micro - economics, students should be able to:

1. To expose the students about the behavior of cost & revenue concepts.
2. To figure out the various objective of the Firms-Traditional and Modern.
3. Students get knowledge of various market structures, analyze, & comprehend its relevance.
4. Students will apply various market behaviors to the real life market scenario such as – retailing, wholesale, pricing of various public utilities etc.
5. Having understood the various market structure they will understand the current knowledge of mergers & acquisition_ leading to rise of oligopolies
6. Students will be able to comprehend & evaluate various market structures & their impact on different state of society.

PUBLIC- FINANCE –(II B.A. YEAR SEM -IV)

Upon completion of Public- finance students should be able to

1. To distinguish between Public finance and Private finance.
2. To understand the need for Public and Private Goods.
3. To make the students understand the concept of Public expenditure and its role and effects.
4. To be acquainted with the different types of taxes.
5. To be familiar with different Canons of taxation.
6. To identify various sources of State revenue.
7. To analyze why State indulges in borrowing –its pros and cons.
8. Finally PF makes the students understand the role of State in people’s welfare through various fiscal policies.

DEVELOPMENTAL –ECONOMICS (III B.A. YEAR SEM -V)

Upon completion of Public- finance students should be able to

1. Students are exposed to conceptual framework of growth and development, qualities of work life and human development index.
2. Students will get to understand various theories of development and underdevelopment with historical perspective.
3. Students will be able to analyze and apply various theories of development and their relevance in Indian context.
4. Students will also be able to make critical examination of uses and abuses of existing theories and explore further to conceptualize new theories relevant to Indian conditions by synthesizing the existing theories.

INDIAN –ECONOMY (III B.A. YEAR SEM -V)

Upon completion of Indian –economy students should be able to

1. Students are exposed to know the basic structure of Indian economy, resource based growth and composition of economy.
2. Students will analyze the role of various sectors and their contributions in terms of growth income and development.
3. Having understood about the growth and distribution, students will be able to apply their knowledge to identify the sectors of priority.
4. Finally students will be able to understand the existing policies and need for policy changes so as to create reforms in the light of globalization.

INTERNATIONAL TRADE (III B.A. YEAR SEM -VI)

After completion of the course, the students would be able to

1. Make out the basic difference between internal and international trade, and also understand that international trade is beneficial to acquire goods at cheaper cost.
2. Illustrate as how international trade acts as an instrument to growth, ‘‘International Trade –Engine to growth.
3. Explain how restrictions to international trade would retard the growth of the economy. Confirm that dis equilibrium in the balance of payments would collapse the economy sometimes, so also suggests some measures to correct disequilibrium as well.
4. Understand how changes in the composition as well as direction of foreign trade have serious repercussions in the balance of payments
5. Recognize that a rise in international trade can make the nations rich and thereby control poverty.

INDUSTRIAL –ECONOMICS

Having successfully completed the course, the students will be able to

1. Demonstrate knowledge & understand the nature of strategic competition and its implications for policy.
2. Understand and analyze theory, models, and concepts
3. Apply the theory to empirical work in Industrial Economics.
4. Have a wide-range of knowledge on various aspects such as –demand, supply, production, cost, market, investment.

COURSE OUTCOME OF POLITICAL SCIENCE

SEM-I B.A I Year - POLITICAL SCIENCE; POLITICAL THEORY (Concepts, Theories, Institutions)

1. To understand the nature and scope of political theory.
2. To understand the significance of political theory.
3. To acquaint with the theories, approaches, concepts and principles of political theory.
4. To appreciate the procedure of different theoretical ideas in political theory.
5. To Interpret and assess information regarding a variety of political theory.
6. To understand the various traditional and modern theories of political science.
7. To evaluate the theories of origin of the state.
8. To comprehend the sources of political information's

SEM-II B.A I Year - POLITICAL THEORY. (Concepts, Theories and Institutions)

1. To understand the concept of state, nation and civil society.
2. To understand the elements and factors of state and nation.
3. To know about the meaning sovereignty, types and characteristics.
4. To analyse critically the theories of monism and pluralism.
5. To learn the origin of the concepts such as Law, power, authority, and legitimacy.
6. To understand the forms of government in various countries and their working pattern
7. To compare with procedure of various social institutions and government institutions.
8. To analyze the meaning of organs of government and theory of separation of power.

SEM-III B.A II Year - INDIAN GOVERNMENT AND POLITICS (Government and Politics)

1. To understand the philosophy of Indian constitutions.
2. To identify the causes, impact of British colonial rule.
3. To appreciate the various phases of Indian national movement.
4. To create value in young youth regarding the patriotism.
5. To understand the various Government of Indian acts their provision and reforms.
6. To know the salient features in making of Indian constitution
7. To appreciate the socio-economic political factors which lead to the freedom struggle.
8. To understand the constitutional orderings and institutional arrangement.
9. To appreciate the fundamental rights and duties and the directive principle of state policy
10. To evaluate the evolution, functioning and consequences of political parties in India.
11. To identify how electoral rules and procedure in India effect election outcomes.

POLITICAL THEORY. (ANCIENT & MEDIEVAL POLITICAL THOUGH).

1. To demonstrate knowledge of key thinkers and concepts
2. To understand the nature, methods and significance of political thought.
3. To analyse the theory of ancient & medieval political thought of Greek and India.
4. To appreciate the ideas of them in context of classification of government, law and revolutions and slavery.
5. To understand the relationship between religion and politics in early modern western political thought.
6. To acquire knowledge about modern political thinkers and their view on state craft.
7. To compare with the social contractalists thoughts of Hobbes, lock, and Rousseau and their view regarding state, government and general will.
8. To appreciate the concept of liberty, representative government.,
9. To analyse the Marxist philosophy in making a better society.
10. To thoroughly compare the democratic revolution and creation of civil society.
11. To appreciate the various social and political ideas of Indian political thinker
12. To inculcate the spirit of ahimsa, satyagraha, through Gandhi ideology
13. To criticize the causes for the theory of caste system in India and their impact.

B.A. III YEAR - PAPER IV- INTERNATIONAL RELATIONS

1. To understand the evolution, scope and significance of international relations and the rise of sovereign state system
2. To analyze the history of international relations through the causes and phases of colonialism.
3. To know the impact of first world war and second world war and its causes and consequences
4. To criticize the various ideologies which lead to the destruction of world.
5. To appreciate the post war developments through the emergence of third world.
6. To understand the concept of power, national, regional, global and peace security
7. To acquaint with the international organizations and their modules nations.
8. To understand the international political economy.
9. To analyse the international security Arms Race. Arms control and Disarmament.
10. To understand the emerging area in international relations.
11. To appreciate the foreign policy their determinants features & its relevance.
12. To critically analyse the Indian's bilateral relations with major power and neighboring countries.
13. To identify various issues and challenges towards international relations
14. To learn about issues of diversity and internationalism

B.A III Year SEMESTER-V PPML/EPP – Paper-V- Political Thought

1. To demonstrate knowledge of key thinkers and concepts
 2. To understand the nature, methods and significance of political thought.
 3. To analyze the theory of ancient & medieval political thought of Greek and India
 4. To appreciate the ideas of them in context of classification of government, law , revolutions and slavery.
 5. To understand the relationship between religion and politics in early modern western political thought.
 6. To acquire knowledge about modern political thinkers and their view on state craft.
 7. To compare with the social contractalists thoughts of Hobbes, lock, and Rousseau and their view regarding state, government and general will.
- To appreciate the concept of liberty, representative government.

PAPER-VI INTERNATIONAL RELATIONS IN 19TH AND 20TH CENTURY)

1. To understand the evolution, scope and significance of international relations and the rise of sovereign state system
2. To analyze the history of international relational through the causes and phases of colonialism.
3. To know the impact of first world war and second world war and its causes and consequences
4. To criticizes the various ideologies which lead to the destruction of world.
5. To appreciates the post war developments through the emergence of third world.
6. To understand the concept of power, national, regional ,global and peace security
7. To acquaint with the international organizations and their modules nations.

SEMESTER- VI

PAPER-VII POLITICAL THEORY (WESTERN AND INDIAN POLITICAL THOUGHT).

1. To understand the concepts of idealistic political thinkers
2. And their view regarding theory of state, rights and political obligations,
3. To analyze the Marxist philosophy in making a better society.
4. To thoroughly compare the democratic revolution and creation of civil society.
5. To appreciate the various social and political ideas of Indian political thinker
6. To inculcate the spirit of ahimsa, satyagraha, through Gandhi ideology
7. To criticize the causes for the theory of caste system in India and their impact.

PAPER-VIII (INTERNATIONAL RELATIONS IN 19TH& 20TH CENTURY)

1. To understand the international political economy.
2. To analyze the international security Arms Race. Arms control and Disarmament.
3. To understand the emerging area in international relations.
4. To appreciate the foreign policy their determinants features& its relevance.
5. To critically analyze the Indian's bilateral relations with major power and neighboring countries.
6. To identify various issues and challenges towards international relations
7. To learn about issues of diversity and internationalism

COURSE OUTCOME OF PUBLIC ADMINISTRATION

SEM-I B.A I YEAR - : INTRODUCTION TO PUBLIC ADMINISTRATION

BA I Year Course-1: Introduction to Public Administration

1. To understand the nature and scope of Public Administration;
2. To appreciate the methodological pluralism and synthesizing nature of knowledge in Public Administration.
3. To comprehend the changing paradigms of Public Administration;
4. To acquaint with the theories, approaches, concepts and principles of Public Administration;
5. To understand the administrative theories and concepts to make sense of administrative practices.
6. To Understand public administration theory and concepts from multiple perspectives.

SEMESTER-II: DEVELOPMENT DYNAMICS AND EMERGING TRENDS

1. To Appreciate the nature, scope and changing paradigms of Public Administration;
2. To Understand the synthesizing nature of knowledge of public administration from public Perspective.
3. Grasp the administrative theories, concepts and principles to make sense of administrative Practices with emerging trends.
4. Role of Public Services in the Emergence and Development of New State of Telangana
5. To appreciate the emerging issues in New State of Telangana in the context of changing role of state, market and civil society
6. Understand the world of public administration from the public perspective and provide foundation for further studies in Public Administration

BA II Year-SEM-III: UNION ADMINISTRATION

1. To understand the historical evolution and socio-economic, political, cultural and global context of Indian Administration;
2. Acquaint with India's development experience and changing role of administration
3. To identify the transformative role of Indian Administration;
4. To make out the multi-dimensionality of problems and processes of Indian Administration;
5. To understand the form and substance of Indian Administration;
6. Acquaint with the functioning of the Indian administration, at central levels and the responses of these systems in addressing the concerns of the people
7. To appreciate the emerging issues in Indian Administration in the context of changing role of state, market and civil society.

SEMESTER-IV: STATE ADMINISTRATION AND EMERGING ISSUES

1. Discern the connects and disconnects between structure, purpose and process and results in Indian Administration;
2. Understand the Indian Administration role as the main instrument of State to achieve its developmental goals;
3. Acquaint with the functioning of the Indian administration, at State levels
4. Appreciate the varying historical, socio-economic, political and other conditioning factors that gave Indian Administration its distinct nature to the learner
5. Acquaint the learner with the required knowledge of administrative science and government in action and the contemporary issues in public affairs management
6. Understand the role of Public Services in the new State of Telangana.
7. To understand the role of public services in Redressal of Citizen Grievances: Transparency, Accountability and Right to Information Act
8. Acquaint with the functioning of the Administrative Accountability: Legislative and Judicial Control

BA III Year-SEMESTER V PAPER V HUMAN RESOURCE MANAGEMENT

1. To comprehend the nature, scope, structure & processes of human resource management;
2. To identify the systems and processes of financial and material management;
3. To appreciate institutional capacity building strategies and programmes; and
4. To understand the changing paradigms of Resources management.
5. Understand the way in which the public power is exercised and public resources are managed and expanded;
6. Unravel the varying methods of performance assessment of public institutions; and
7. Appreciate the changing paradigms of human resource management.

SEMESTER VI PAPER VI –FINANCIAL AND MATERIAL MANAGEMENT

1. Understand the way in which the public power is exercised and public resources are managed and expanded.
2. Unravel the varying methods of performance assessment of public institutions.
3. 3.Appreciate the changing paradigms of human resource management .

BA III YEAR-SEMESTER VI PAPER VI PUBLIC OFFICE MANAGEMENT

COURSE-IV C: PUBLIC OFFICE ADMINISTRATION (DSE-C)

1. To understand the concept of Office;
2. To comprehend the administrative process in office;
3. To identify the challenges of public office administration in the background of ICT
4. To sketch out the impact of technology in office administration
5. Understand the meaning and related concepts of Office and office management;
6. Explain the filing and record management
7. Identify the issues and challenges in functioning of public office.

SEMESTER VI – PAPER VIII- TECHNOLOGY AND OFFICE ADMINISTRATION.

1. Understand the meaning and related concepts of office and office management .
2. Explain the filing and record management .
3. Identify the issuers and challenges in functioning of public office

**ELECTED PAPER –COURSE IV :LOCAL GOVERNANCE AND DEVELOPMENT
IN INDIA (DCE-A) SEMESTER V PAPER –VII – RURAL LOCAL
GOVERNANCE**

1. To understand the concept of Democratic Decentralization.
2. To trace the evolution of local self – government in India .
3. To comprehend the institutional arrangements and processes of rural and urban governance.
4. To identify the challenges of development and the administrative responses.
5. To sketch out the new organizational arrangements for delivery of public welfare programmes.

SEMESTER VI – PAPER –VIII URBAN LOCAL GOVERNANCE

1. Critically appreciate the relationship of local governance and development .
2. Appreciate the rural and urban institutional arrangements for development .
3. Understand the processes and results of systems of delivery of welfare programmes.

COURSE OUTCOME OF MASS COMMUNICATION

SEM –I PAPER-I: INTRODUCTION TO COMMUNICATION & JOURNALISM

1. To introduce basic concepts of communication and its role in society
2. To introduce students to various processes and theories of communication
3. To introduce the students to basics of journalism and its role in society
4. To introduce different types of media their characteristics, merits and demerits
5. The students can understand various types of journalism and their importance
6. The units provide students an understanding of the importance of public opinion and role of journalism in framing it.

SEM –II MASS MEDIA IN CORE

1. To introduce students to the history of print media and its role in Indian freedom movement.
2. To introduce to evolution and growth of Indian cinema, regional and parallel cinema
3. To introduce to history and evolution All India Radio, New developments in Radio
4. To introduce students to history and development of television industry
5. To help students understand the history and basics of online media.
6. To provide the students a basic idea on cybercrimes and cyber laws that govern them.

SEM –III REPORTING & EDITING FOR PRINT MEDIA

1. To introduce students to basics of reporting and writing for print media.
2. To enable the students understand news values and qualities of reporters.
3. To enable students to understand newspaper organization structure and editorial department.
4. To introduce to different types of reporting and their importance
5. To enable students to understand different forms of journalistic writing
6. To provide them basic understanding on various media laws and ethics

BA IIIYR ANNUAL PATTERN PAPER III : ADVERTISING AND PUBLIC RELATIONS

1. To introduce students to basics of advertising and its role in society
2. To train them in basics of ad campaign designing and copy writing
3. To make the students understand the scope, functioning of Public relations
4. To enable students understand the various PR tools and publics
5. To introduce to role of PR in government and private sectors
6. To provide students an understanding of various forms advertising

PAPER – IV: MEDIA AND DEVELOPMENT

1. To enable students to understand the various factors of economic development
2. To enable to learn the problems of human development and required measures to overcome them.
3. To introduce students to development issues in India and coverage of media on these issues.
4. To explain the role of folk media in development communication
5. To inculcate the idea of social responsibility and create awareness of state and central government welfare measures.
6. To train the students on various media programme formats of development communication

SEMESTER VI PAPER VII:PUBLICRELATIONS

1. Students would learn about the definitions and concepts of public relations, publicity, propaganda, advertising and e-PR.
2. Students would know the difference between public relations and corporate communications, public relations and advertising, public relations and propaganda, public relations and publicity, propaganda and publicity.
3. Students would gain knowledge about the tools of public relations.
4. Students would learn the basics of public relations writings.
5. Students would gain knowledge about the basic ethics and laws of public relations.

PAPER VIII: ONLINE JOURNALISM

1. Students would be able to understand the basics of Online journalism.
2. Students would be able to inculcate the knowledge of student elements of Online journalism.
3. Students would be able to acquaint them with important aspects of the process of Online journalism.
4. Students would be able to develop the knowledge of skills of Online journalism.
5. Students would be able to enhance understanding of the technical terms and jargons of Online journalism.
6. Students should be able to familiarise with the freedom of expression in Cyber laws.

COURSE OUTCOME OF PSYCHOLOGY

SEMESTER- I

1. Introduce students to the dynamic field of Psychology, teach them about traditional and contemporary approaches to Psychology and Methods used in Psychology
2. To demonstrate an understanding of the scientific method, and the various research methodologies used in psychology.
3. To orient students about the biological basis of behaviour and Sensory experiences
4. To demonstrate an understanding of human life-span development from conception through death, including the issues of nature vs. nurture, genetic endowment, and the role of natural selection/evolution in human behavior.
5. To introduce them to basic concepts of Attention, Perception and Learning
6. To facilitate students to gain a perspective about fundamental processes underlying Behaviour towards the end of this semester

SEMESTER- II

1. To teach students about basic Cognitive processes related to Storage and Retrieval, i.e., Memory and Forgetting
2. To familiarize students with processes underlying Thinking, Reasoning and problem solving
3. To introduce students to concepts of Motivation and make them understand about development of Emotions
4. To make them aware about concept of Intelligence, development of tests and types of tests used to assess Intelligence
5. To enable Critical Thinking Skills: To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
6. To enable students to gain overall understanding about the basic Cognitive and Behavioural process in Psychology

SEMESTER- III

1. To familiarize students with concept of Personality and factors influencing Personality
2. To introduce students to major theoretical approaches and other contemporary approaches to Personality
3. To help them understand various types of assessments in measuring Personality
4. To make them understand the importance of Psychological Testing and various types of tests available to measure Behaviour
5. To identify and describe the major theories of personality, including diagnosis and treatment of personality disorders
6. To list the methods of personality assessment, the basic criteria by which tests are evaluated, and common measures of personality.

SEMESTER- IV

1. To familiarize students with basic statistical methods.
2. To help students understand and quantify psychological behaviour through statistical methods.
3. To teach students how to conduct experiments on psychological phenomenon.
4. To enable students analyse and report the data of experiments and see its relevance to the phenomenon.

SEMESTER- V

1. To orient students about basic concepts of Social Psychology and major theoretical perspectives in social psychology
2. Understand how theory motivates research and how research modifies theoretical statements about human social behavior
3. Learn how classic research, such as the Milgram paradigm, shaped social psychology and the culture
4. Understand cross-cultural differences and similarities in social behaviour.
5. To define and understand the developmental process of adolescence.
6. To apply different theories of development to adolescence.
7. To consider what factors put adolescents at risk.
8. To teach students in planning and conducting psychological experiments.
9. To teach importance of using psychological test.
10. To enable students analyse and report the data of experiments and see its relevance to the phenomenon.
11. To help students understand the importance of enhancing psychological competencies for better living.

SEMESTER- VI

1. To introduce students to the fundamental concepts and scientific principles underlying abnormal human behaviour.
2. To increase awareness about mental health problems in society.
3. To create a foundation for higher education and a professional career in clinical psychology.
4. To help students understand the spectrum of health and illness for better health management.
5. To help students gain insight into mind-body relationship.
6. To teach students measurement of behavior through testing and field studies
7. To enable students to quantify, interpret the data using statistics and draw conclusions.

RESEARCH PROJECT IN PSYCHOLOGY

1. Brief Introduction to data collection will be delivered before planning the project
2. Four areas in psychology will be identified and topics will be selected from any two areas.
3. This will be at the discretion of teacher (areas will be decided during the training for Psychology faculty after establishing viability and cost)
4. Methodology for the project will be arrived at from a Teacher – Student interaction

MODERN LANGUAGE (ENGLISH) COURSE OUTCOMES

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II BA Semester III : Types of Drama

Upon completion of the course the students will be able to:

1. Interpret literary texts in English by nurturing and utilizing their ability to understand drama in a skilled, knowledgeable, and ethical manner.
2. Conceptualize various types of drama viz. Tragedy, Comedy, Farce, Melodrama, Historical Plays through the prescribed texts and analyze the effect they create in the audience or readers.

3. Gain knowledge in the development of English drama from 16th Century to 21st century viz. Shakespearean drama, Sentimental Comedy, Romantic Comedy, Shavian plays and One-act plays
4. Understand the structure of a play and learn the dramatic devices used in writing a play
5. Become well acquainted with the rhetorical aspect of Drama, historical contexts and psycho-social aspects.
6. Develop reading, writing and analytical skills and communicate their ideas critically, creatively, and persuasively through the medium of language in the current information-intensive society.
7. Raise significant questions, gather relevant evidence, reach well-reasoned conclusions, weigh alternative systems of thought, and write as means of intellectual inquiry and creative expression.
8. Discern the various cultural and moral values associated with the texts which help them to become ethical communicators.

COURSE OUTCOME: Modern Language (English) - CBCS

Semester IV: English Fiction

Upon completion of the course the students will be able to:

1. Conceptualize the Genre of Novel and its types viz. Allegorical, Gothic, Historical, Epistolary, Picaresque, and Psychological.
2. Gain knowledge in the development of English Fiction from the 17th Century to the 21st century – from man's physical adventures to social and psychological journeys.
3. Learn the elements of fiction – Narrative Technique, Setting, Point of view, Style and Detective fiction.
4. Become well acquainted with the literary genre of Novel and Short Story and literary devices of allegory and metaphor, satire, and stream of consciousness technique
5. Enhance Reading skills and understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.
6. Understand the social, historical and political backgrounds of the world of the novelists and short story writers through the elaborate and allegorical descriptions in the prescribed novels.
7. Get a wide exposure of eminent writers like George Orwell, Jane Austen and Daniel Defoe, Rudyard Kipling and Sir Arthur Conan Doyle's creation –the famous Sherlock Holmes. Their unique styles of writing and imagination help to enhance their creative writing skills.

COURSE OUTCOMES: Modern Language (English)

JJBA – Semester V (Core 5) Modern Language English Paper V : Modern Indian Literature

Upon completion of the course the students will be able to:

1. Broadens the origin of English education during British Empire in India.

2. Focuses on the role of English during freedom struggle
3. Analyses the cause for the decline of the British colonies
4. Emphasizes on the emergence and importance of Dalit Literature in India
5. Highlights the glory of Indian writings in English
6. Inculcate the essence of the Hindi writings/Indian Literature in English

Paper VI A : Discipline Centric Elective - 1A Contemporary World Literature

Upon completion of the course the students will be able to:

1. Defines and introduces the background of war poetry
2. Instructs the features of Post – modernism
3. Helps a study on Theatre of the Absurd and Globalization
4. Inculcate interests to focus on worried contemporary literature
5. Deepens the knowledge of contemporary world culture through literature
6. Ignites the minds to compare the glory of Indian writings with other writings
7. Focuses on the vocabulary of culture and society
8. Enhances aesthetic sense – admiring the beauty of life and literature
9. Offers a platform for communicative skills to choose alternative careers like content writing, film making, theatre arts etc.,

Semester VI (Core 6)Modern Language – English Paper VII : American Literature

Upon completion of the course the students will be able to:

1. Instills the background of civil war and Trancendentalism.
2. Emphasizes on the meaning and the significance of American Dream, then and now
3. Aids to comprehend the effects of racism
4. Extends an opportunity to study a brief history American Literature – Poetry, Drama and Fiction
5. Paves way to know the life, culture language and society through literature
6. Kindles to compare American writings with Indian writings with English
7. Inculcates interests among youth to study abroad, the need of the hour

Semester VI Paper VIII B : Discipline Centric Elective – 2 A Literary Criticism and Theory

Upon completion of the course the students will be able to:

1. Introduces to the basics of Literary Criticism
2. Widens the knowledge of literary and focuses on their importance
3. Helps to write a critical appreciation
4. Provides an insight of practical criticism
5. Ingrains the mind towards creative writing, appreciation, critical thinking and critical analysis
6. Accentuates expression of thoughts and views for critical appreciation and judgmental reviews
7. Enhances fluency of languages, presentation skills and creative writing.

UG –COURSE OUTCOMES DEPARTMENT OF COMMERCE B.COM

(GENERAL) AND B.COM (COMPUTERS)

I- YEAR SEMESTER-I FINANCIAL ACCOUNTING – I (GENERAL & COMPUTER)

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

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

BUSINESS ECONOMICS(GENERAL & COMPUTER)

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

1. Understand economics in terms of business.
2. Evaluate supply and demand analysis .
3. Analyze the consumer behaviour.
4. Interpret the factors affecting firm such as production , costs and revenue.
5. Analyze the performance of firms under different market structures.
6. Assess economic issues and policies.

BUSINESS ORGANIZATION(GENERAL & COMPUTER)

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

1. Understand the scope of Business, and its importance.
2. Describe the Social Responsibility and Ethics of Business
3. Analyse different forms of business organizations
4. Identify various vital documents of a company
5. Learn various sources Industrial Financial resources
6. Explain the functioning of Stock Exchanges & Mutual funds.

INFORMATION TECHNOLOGY(GENERAL & COMPUTER)

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

1. Acquire knowledge about generation of computers and types of computers.
2. Explain hardware/software methods and tools.
3. Know about different versions in windows operating system.
4. Evaluate types of operating systems and booting process.
5. Learn types of virus and how to protect the data from virus.
6. Understand Internet and browsing services available in internet-WWW-ISP- Browsers.

I-YEAR SEMESTER-II:FINANCIAL ACCOUNTING-II(GENERAL & COMPUTER)

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

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

MANAGERIAL ECONOMICS-(GENERAL & COMPUTER)

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

1. Understand economic environment, effective managerial decision-making process
2. Understand of the theory and analytical tools that can be used in decision-making problems.

3. Analyze knowledge of the economic theory with decision-making techniques.
4. Use economic models to isolate the relevant elements of a managerial problem, identify their relationships
5. Formulate them into a managerial model to which decision making tools can be applied.
6. Use of Graphs is encouraged.

PRINCIPLES OF MANAGEMENT(GENERAL & COMPUTERS)

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

1. Understand the importance of Administration & Management.
2. Interpret the Principles of Management in traditional & modern scientific way.
3. Demonstrate the details about Planning and MBO
4. Learn about Principles of Organization & various types of Organizations.
5. Learn about Co-ordination, Control, Principles, techniques & Span of Management.
6. Describe Delegation and Decentralization types of delegation.

MANAGEMENT INFORMATION SYSTEM(COMPUTERS)

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

1. Understand the core activities in the systems development process.
2. Learn the basic concepts and technologies used in the field of Management information systems.
3. Acquire the knowledge of different types of management information systems.
4. Evaluate the role of information systems in organizations, the strategic management processes, and the implications for the management.
5. Analyze the importance of managing organizational change associated with information systems implementation
6. Acquire the knowledge of MS-Access as a database tool to manage the organization information.

FOREIGN TRADE(GENERAL)

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

1. Analyse the different types of documents used in foreign trade
2. Learn the components of Balance of payment and Balance of trade in international trade.
3. Understand the trade and types of blocs in international trade.
4. Understand the objectives and functions of international economic institutions.
5. Know about the Indian trade policy.
6. Learn about the International economic institutions.

II -YEAR SEMESTER-III

PRINCIPLES OF INSURANCE BUSINESS(GENERAL & COMPUTERS)

Upon successful completion of the student will be able to:

1. Identify and categories the various risks faced by an organization & individuals.
2. Relate to the role of Insurance in economic development of society and social security.
3. Understand the basic terminology and Principles of Insurance.
4. Describe the difference between Life & Non –Life insurance Products.
5. Able to understand the various policies of Insurance.

ADVANCED ACCOUNTING (GENERAL & COMPUTERS)

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

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

INCOME TAX-I (GENERAL & COMPUTERS)

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

1. Acquire the complete knowledge of basic concepts of income tax
2. Illustrate the concept of exempted incomes.
3. Calculate Residential status of a person.
4. Compute the income under the head” Income from Salary”
5. Compute income under the head “Income from House Property”
6. Compute income under the head “Income from Business or Profession”

BUSINESS STATISTICS (GENERAL & COMPUTERS)

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

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

6. Predict values of strategic variables using regression and correlation analysis.

PROGRAMMING WITH C (GENERAL & COMPUTERS)

Upon successful completion of the student will be able to:

1. Understanding concept on structural Programming language, Pseudo code and Algorithm with textual information, data types, characters and strings.
2. Ability to work with Looping and Branching statements practically with expressions.
3. Ability to work with arrays and strings of complex objects.
4. Understanding a concept of functional hierarchical code organization.
5. Understanding a defensive programming concept on Structures on Unions.
6. Ability to handle possible errors during program execution using Functions.

ENTREPRENEURIAL DEVELOPMENT AND BUSINESS ETHICS(GENERAL & COMPUTERS)

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

1. Understand the development of entrepreneurship as a field of study and as a profession.
2. Understand the creative process of opportunity identification and screening.
3. Analyze new concept/product/service ideas as an entrepreneur.
4. Understand the role of government in promoting entrepreneurship.
5. Understand the importance of building a support network for the new venture.
6. Understand the importance of Business Standards and business ethics.

II YEAR – SEMESTER - IV

PRACTICE OF LIFE INSURANCE(GENERAL & COMPUTERS)

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

1. Analyse the growth of insurance business in India.
2. Explain the Organizational structure of LIC & various types of Policies.
3. Understand the meaning of various insurance policies offered to Organizations
4. Apply the meaning of assignment & Nomination.
5. Describe about Policy claim procedure.
6. Evaluate survival benefits & various kinds of claims.

CORPORATE ACCOUNTING (GENERAL & COMPUTERS)

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

1. Apply the procedures for company liquidation and its modes.
2. Understand the accounting treatment for internal reconstruction and acquisition.
3. Define the procedures for mergers and amalgamations.
4. Acquire the knowledge of maintaining the books of accounts for Banks
5. Formulate Final Accounts for Insurance Companies
6. Explain the procedure for Insurance claims and their treatment.

INCOME TAX –II (GENERAL & COMPUTERS)

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

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

BUSINESS STATISTICS-II (GENERAL & COMPUTERS)

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

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

PROGRAMMING WITH C++ (COMPUTERS)

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

1. Understand structured variables, classes and objects, features of C++ supporting object oriented programming

2. Master using key structured programming constructs: declarations, sequence, selection, repetition, evaluating expressions.
3. Understand advanced use of arrays, pointers(reference parameters) and functions and the other concepts in C++ programming related to good modular design.
4. Be familiar with C++ classes and understand the relative merits of C++ as an objectoriented programming language.
5. Understand how to apply the major object-oriented concepts to implement objectoriented programs in C++, encapsulation, inheritance and polymorphism
6. Understand advanced features of C++ specifically stream I/O andoperator overloading.

FINANCIAL STATEMENT ANALYSIS(GENERAL)

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

1. Acquire knowledge and techniques of Financial Statement Analysis.
2. Prepare various analytical financial statements.
3. Understand the use of related financial information relevant to the various users
4. Identify the operational efficiency and managerial effectiveness.
5. Analyze the reasons for change in profitability and financial position of the firm.
6. Calculate various accounting ratios, reports and relevant data helpful for Management control and decision making.

III YEAR – SEMESTER V (CBCS):

PRACTICE OF GENERAL INSURANCE (GENERAL & COMPUTERS)

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

1. Understand the meaning of insurance & how it is helpful in day to day life.
2. Explain about life insurance & General insurance concepts
3. Understand the importance of insurance in day to day life.
4. Understand the calculation of premiums for various insurance products.

5. Analyze the risk and the procedure to manage the risk in various situations.
6. Acquire knowledge about underwriting process & related claim processes.

INTRODUCTION TO INDIAN ECONOMY (GENERAL & COMPUTERS)

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

1. Build An Overview of Indian Economy
2. Measure The Latest Developments In The Economy
3. Analyze Developmental Issues-Structural Changes In The Indian Economy-
4. Demonstrate Policy Aspects of Indian economy:

COST ACCOUNTING (GENERAL & COMPUTERS)

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

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

BUSINESS LAW (GENERAL & COMPUTERS)

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

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

BANKING THEORY & PRACTICE (GENERAL & COMPUTERS)

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

1. Describe the Origin and Growth of Banking in India
2. Discuss the role and functions of RBI.
3. Explain different types of banks and their functions.
4. Understanding the Banker And Customer relationship
5. Classify and compare the Negotiable Instruments
6. Understand the different Loans and advances offered to the customers and evaluate their latest trends.

EXCEL FOUNDATION (COMPUTERS)

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

1. To familiarize oneself with Excel's 2013 basic features
2. Create and design a spreadsheet for general office& business use.
3. Demonstrate formatting techniques and presentation styles including templates various tasks.
4. To manage the contents of cells and ranges within and between workbooks
5. Demonstrate how to secure information in an Excel workbook.
6. To use Print Preview to examine a spreadsheet before printing Excel worksheets with ease for presenting business reports.

WEB TECHNOLOGY(COMPUTERS)

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

1. Outline the history of the web, and technologies that makes the web pages and publishing them.
2. Make the web pages more dynamic and interactive.
3. Design to create structure of web page, to store the data in web document, and transfer information.
4. Students are able to develop a dynamic webpage by the use of java script and DHTML.
5. Students will be able to write a well formed / valid XML document.
6. Implement the role of XML for the management and delivery of electronic information for given application.

AUDITING(GENERAL)

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

1. Understanding Auditing as per AASB.
2. Explain the Qualification, Disqualification, Rights and Duties of an Auditor.

3. Describe Audit programme ,Audit Note Book ,Audit Working Notes and Audit Markings
4. Define Internal Audit and internal control, its meaning and objectives, types of Vouchers and its application.
5. Distinguish between Verification and Valuation of various Assets and Liabilities.
6. Describe the meaning and role of Audit Committee with reference to Audit Reports.

COMPUTERISED ACCOUNTING (GENERAL & COMPUTERS)

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

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

ACCOUNTING STANDARDS (GENERALS)

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

1. Learn various Accounting Standards and its formulation.
2. Understand the Objectives, Benefits and limitations of AS
3. Developing a Road map for implementation of Indian AS
4. Applying the standards in accounting transactions and solving simple problems
5. Understand the benefits of IFRS
6. Analysing and integrating the Indian AS with IFRS.

ADVANCED CORPORATE ACCOUNTING (GENERALS)

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

1. Apply details of accounting as per AS -21, regarding Holding companies.
2. Understand the Double Account system pertaining to Electricity Companies.
3. Equipping the students with techniques for accounting for price level changes.
4. Solve problems pertaining to Lease Accounting with reference to AS-19.
5. Examine the perspectives of HRA and SRA.

THEORY AND PRACTICE OF GST

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

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

MANAGERIAL ACCOUNTING

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

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

REGULATIONS OF INSURANCE BUSINESS

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

1. Demonstrate the students with the knowledge regarding Insurance business and policies, rules and regulations of IRDA
2. Identify the procedure of claims, to represent grievances of policy holder.

COMPANY LAW

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

1. Demonstrate the students the legal provisions applicable for the formation of company
2. Outline the management of companies
3. Explain the roles and duties of company secretary.
4. Illustrate the company meetings.
5. Understand the legal provisions applicable for the winding up of companies as per the Companies Act 2013.

COMMERCE LAB

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

1. Discuss the different kinds of licenses and forms required for different businesses.
2. Differentiate the various documents used by banking and insurance companies.
3. Demonstrate the knowledge of important documents required for an incorporated company.

4. Explain the documents of taxation as per existing legal provisions.
5. Create different kinds of business charts for decision making process.

FINANCIAL INSTITUTIONS & MARKETS

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

1. State the different components of Indian financial markets and its functions.
2. Differentiate the various financial institutions and their working .
3. Demonstrate the knowledge of Money market and its various instruments.
4. Explain the role of debt market in the Indian economy.
5. Summarize the development of Equity markets and the working of SEBI.

RELATIONAL DATABASE MANAGEMENT

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

1. Understand why to use DBMS and what are its architectural concepts.
2. Implement DBMS using Relational and ER models.
3. How normalisation helps in building a better database.
4. Attain a good practical understanding of SQL.
5. Understand the basic concepts of Concurrency Control & database security
6. Need for Distributed databases and client server databases.

E-COMMERCE

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

1. Understanding E-Commerce environment and its application areas.
2. Evaluate the effect of changing technology on traditional business models and strategy.
3. Knowledge of framework, ethical and legal issues related to e-commerce technologies.
4. Identify security & frauds in E-payments.
5. Determine the EDI software for implementation of business documents.
6. Designing E-Marketing & online advertising techniques and their application.

B.Sc (MICROBIOLOGY) COURSE OUTCOMES

Semester – I General Microbiology

Upon successful completion of the course, students are expected to be able to:

1. Understand nature of science and scientific enquiries, and have mastered a set of fundamental skills and effect of microorganisms on everyday life, health, food, sanitation, genetic engineering.
2. Have a thorough concept of microscopy, methods of staining and measurement
3. Gain knowledge about how microorganisms are ubiquitous in nature with a concept on classification and general characteristics on microorganisms.
4. Understand general characters of eukaryotes and viruses.

Semester - II General Microbiology

Upon finishing the course in general microbiology students are able to :

1. Perform and follow sterilization techniques and display a habit of good lab practices.
2. Develop and have thorough knowledge of developing pure cultures and methods of preservation techniques
3. Understand the fundamental biochemical principles, such as the structure/function of biomolecules
4. Gain knowledge on current *biochemical* and molecular technique and carry out experiments.

Semester - III Microbial Physiology & Enzymology

By the conclusion of this course, the students should be able to:

1. Identify the various physiological groups of bacteria with their special features.
2. Detail the macromolecules required for cell synthesis and growth as well as explain the various transport systems involved in the uptake of nutrients by bacteria
3. Devise and prepare media for isolation and growth of microorganisms, describe the different stages, methods and measurement of microbial growth and how environmental factors (pH, temperature, salt concentration) effect microbial growth, metabolism, and physiology.
4. Explain the structure and function of enzymes, how enzymes are able to increase speed of an biochemical reaction, mechanisms of regulation of enzymatic action, importance of enzymes in regulation of metabolism

5. Explain the principles of the energy-yielding and -consuming reactions, the various catabolic pathways(including **fermentations and photosynthesis**), and the mechanisms of energy conservation in microbial metabolism.

Semester - IV Microbial Genetics

By the conclusion of this course, the students should be able to:

1. Analyze the basic concepts of hereditary and the process of inheritance, understand the functions and molecular structures of DNA and RNA and how they serve as genetic information and concept of plasmids and transposons.
2. Analyze the molecular mechanisms behind DNA damage and repair, classify mutations and discuss the various ways in which bacteria acquire new genetic information. (transduction, transformation, and conjugation)
3. Conceptualise gene and their types and explain the processes and regulatory mechanisms governing the synthesis of nucleic acid and protein
4. Explain the basic principles of genetic engineering (enzymes and vectors) and the applications of genetic engineering in various fields.

Semester – V Immunology

By the conclusion of this course, the students should be able to:

1. Demonstrate a comprehensive and practical understanding of basic immunological principles involved in research and clinical/applied science.
2. Differentiate between humoral and cell mediated immunity and Learn about the different cells in immune system and their role in immunity.
3. Understand the concept of antigens, antibodies and their structures in brief.
4. Understand about the types of hypersensitivity and autoimmunity.
5. Discuss current immunology news and issues.

Applied Microbiology

On completion of this course, students should be able to:

1. Understand the role of microorganisms as plant growth promoting bacteria and understanding the characteristics of soil.
2. To understand the concepts and approaches to manage plant pathogens and diseases in crops and natural plant communities by measures that have minimal impact on the environment.
3. To understand the concept of nitrogen fixation and role of microorganisms in the geochemical cycles and host- microbe interactions .
4. Understand the role of microorganisms as agents of environmental change & recognize microorganisms as indicators & to understand microbial processes aimed to solve environmental problems

Semester – VI Medical Microbiology

On completion of this course, students should be able to:

1. Understand the importance and the role of normal flora, diagnosis and treatment.
2. Description , classification, structure, and pathogenesis of bacteria that infect humans.
3. To understand the importance of pathogenic bacteria in human disease with respect to infections of the respiratory tract, gastrointestinal tract, urinary tract, skin and soft tissue and explain the methods of microorganisms control, e.g. chemotherapy & vaccines. Solve problems in the context of this understanding.
4. Recall the relationship of this infection to symptoms, relapse and the accompanying pathology.

Food Microbiology

On completion of this course, students should be able to:

1. Understand the role microorganisms in food spoilage & to use predictive microbial growth programs with various food case studies to examine growth of foodborne pathogens and spoilage microbes.
2. Understand theoretical background of functional micro-organisms (lactic acid bacteria, yeasts and molds), their behaviour as fermentation starters, process engineering aspects of the formation of biomass and products, and of modern biotechnology in food fermentation.
3. Understand the concept of food preservation and food poisoning.
4. Understand microbial processes aimed to solve environmental problems.

COURSE OUTCOMES

M.SC MICROBIOLOGY (CBCS)

SEMESTER-I GENERAL MICROBIOLOGY

This focuses on general principles of microbiology, microbial cell structure and function and their growth and metabolism.

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

1. Understand the basic microbial structure and functions of various physiological groups of prokaryotes and eukaryotes and also learn the theory and practical skills in microscopy handling and staining techniques
2. Know various Culture media and their applications and understand various physical and chemical means of sterilization and also learn various techniques for isolation of pure cultures
3. Comprehend the various methods for identification of unknown microorganisms and study microbial metabolism – Autotrophy and heterotrophy modes of nutrition
4. Understand the microbial physiology and know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement

VIROLOGY

This course explores Virology- the study of Viruses that infect all types of living organisms on earth.

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

1. Understand the architecture of viruses, their classification and the methods used in their study.
2. Discern the replication strategies of representative viruses from the seven Baltimore classes and comprehend the intricate interaction between viruses and host cells
3. Comprehend the role of viruses in oncogenesis, and ways of preventing/ treating viral infections.
4. Know how viruses can be used as tools to study biological processes, as cloning vectors and for gene transfer.

RESEARCH METHODOLOGY & TECHNIQUES

This paper provides students with an introduction to quantitative and qualitative research methods and to the types of skills necessary for the planning and data gathering

1. To equip students with a basic understanding of the underlying principles of quantitative and qualitative research methods and to provide students with in-depth training on the conduct and management of research.
2. The ethical and philosophical issues associated with research in education.
3. Enable students to acquire expertise in the use and application of the methods of data collection and analysis.

4. Provide learning opportunities to critically evaluate research methodology and findings and to enable students to be reflexive about their role and others' roles as researchers.

MICROBIAL BIOCHEMISTRY

Microbial Biochemistry is a branch of science which combines biological, chemical and physical principles and its application to living systems pertaining to both macro and micro organisms.

Upon successful completion of the course, students are expected to be able to:

1. Describe the concepts of pH, buffers, Henderson-Hasselbalch equation, biological buffer systems and their importance.
2. Understanding the laws of thermodynamics, concepts of entropy, enthalpy and free energy changes and their application to biological systems and about various biochemical reactions and metabolic pathways.
3. Overview of major biomolecules –carbohydrates, lipids, proteins, aminoacids, nucleic acids, classification, structure, function, significance and biosynthesis and the degradation pathways of the above mentioned biomolecules
4. Conceptual knowledge of properties, structure, function of enzymes, enzyme kinetics and their regulation, enzyme engineering, Application of enzymes in large scale industrial processes.

Semester-II

MOLECULAR BIOLOGY AND MICROBIAL GENETICS

1. Molecular Biology basically deals with study of DNA and other biomolecules essential for sustenance of life and varied mechanisms involved at molecular level.
2. Upon successful completion of the course, students are expected to be able to:
3. Understand the structure, properties and function of genes in living organisms at the molecular level and knowledge about DNA as a genetic material, enzymology, and replication strategies molecular mechanisms involved in transcription and translation.
4. Describe the importance of genetic code and wobble hypothesis and discuss the molecular mechanisms underlying mutations, detection of mutations, DNA damage and repair mechanisms Explain the concept of recombination, linkage mapping and elucidate the gene transfer mechanisms in prokaryotes and eukaryotes
5. Handle and independently work on lab protocols involving molecular techniques.

ENVIRONMENTAL & AGRICULTURE MICROBIOLOGY

Environmental microbiology is the study of the composition, physiology and significance of microbial communities in the environment (soil, water, air) and **Agriculture microbiology** deals with plant microbe interactions and the microbiology of soil fertility, such as microbial degradation of organic matter and soil nutrient transformations.

Upon successful completion of the course, students are expected to be able to:

1. Competently explain various aspects of environmental microbiology –water, air and soil and Comprehend about water pollution, Water-borne diseases and their transmission, methods of determination of sanitary quality of water and sewage treatment methods employed in waste water treatment
2. Appreciate the diversity of microorganisms and learn the abundance, distribution and significance of microorganism in the environment such as bioremediation and plant microbe interactions
3. Understand the various biogeochemical cycles - microbes involved and biochemical mechanisms of Carbon, Nitrogen, Phosphorus cycles etc.
4. Learn in detail the types and mechanisms of nitrogen fixation and applications of diazotrophs as biofertilizers and their production techniques.

IMMUNOLGY

1. Demonstrate and understanding of key concepts in immunology along with overall organization of the immune system .
2. Begin to appreciate the significance of maintaining a state of immune tolerance sufficient to prevent the emergence of autoimmunity.
3. To understand about Tumor Immunology and help the students to understand its immune prophylaxis and immune therapy.
4. To make them understand the salient features of antigen antibody reaction & its uses in diagnostics and various other studies.
5. Learn about immunization and their preparation and its importance

PHARMACEUTICAL MICROBIOLOGY

Pharmaceutical Microbiology is an applied field of microbiology which deals with the role of microorganisms in pharmaceutical industry.

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

1. Understand the role of microorganisms in pharmaceutical /cosmetic industry , their sources, methods of disinfection, sterilization and preservation of pharmaceutical formulations.
2. Evaluate methods of sterility testing, microbial content testing and gain Knowledge of GMP practices.

3. Describe and understand the mechanism of action of Non-therapeutic antimicrobial and therapeutic antimicrobial agents.
4. Recognize the biochemical and genetic basis for antibiotic resistance and ways of controlling spread of antibiotic resistance.
5. Demonstrate a knowledge and understanding of microbiological assays of growth promoting and growth inhibiting substances.

Semester-III

FOODMICROBIAL TECHNOLOGY

Food microbiology is the scientific study of microorganisms both in food and used for production of food. This course also deals with microbiological analysis of food to determine the safety and quality of food

Upon successful completion of the course, students are expected to be able to:

1. Understand the beneficial role of microorganisms in food processing and the microbiology of different types of fermented foods – pickles, bread, Idli, Tempeh etc. Study the different types of microorganisms in milk and their activities - fermented dairy products and spoilage and their applications as probiotics
2. Understand the significance and activities of microorganisms in various food and role of intrinsic and extrinsic factors on microbial growth in foods leading to spoilage, and understand the principles underlying the preservation methods
3. Recognize and describe the characteristics of important food borne pathogens and Learn various methods for their isolation, detection and identification
4. Understand of the basis of food safety regulations and discuss the rationale for the use of standard methods and procedures for the microbiological analysis of food.

MEDICALMICROBIOLOGY

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

1. Course provides learning opportunities in the basic principles of medical microbiology and infectious disease.
2. Know the conceptual basis for understanding pathogenic microorganisms and the mechanisms by which they cause disease in the human body.
3. It also provides opportunities to develop informatics and diagnostic skills, including the use and interpretation of laboratory tests in the diagnosis of infectious diseases and use of lab animals in medical field.
4. To understand the importance of pathogenic bacteria in human disease with respect to infections of the respiratory tract, gastrointestinal tract, urinary tract, skin and soft tissue and explain the methods of microorganisms control, e.g. chemotherapy & vaccines. Solve problems in the context of this understanding.
5. Recall the relationship of this infection to symptoms, relapse and the accompanying pathology.

INDUSTRIAL MICROBIOLOGY

Industrial microbiology is a part of microbiology that focuses on the production of products and services by microorganisms.

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

1. Appreciate how microbiology is applied in manufacture of industrial products , learn methods in discovery of new useful microorganisms and acquire knowledge of the design of Fermentors and process controls .
2. Develop an understanding of fermentation & inoculum media, their formulation and principles & techniques of sterilization .
3. Appreciate the different types of fermentation processes & understand the biochemistry of various fermentations and product recovery methods.
4. Get acquainted with techniques applicable for Improvement of microorganisms based on known biochemical pathways and regulatory mechanisms and learn the methods of immobilization of enzymes and cells.

ADVANCES IN BIOTECHNOLOGY

Advances in Biotechnology deals with principles and new trends in biotechnology and its application in allied fields.

After completion of the course the students will be able to:

1. To know the basics and concepts of various biotechnological related terms and explain the physiological processes and discuss issues related to plant transgenics, significance of transgenic plants as bioreactors for the production of enzymes, plantibodies, edible vaccines and therapeutic proteins.
2. Address bioethical and biosafety issues related to plant transgenics and understand , conduct and gain a thorough knowledge to perform plant tissue culture experiments.
3. Explain and elucidate the molecular techniques, gene transfer methods for the production of transgenic animals and techniques involved in gene manipulation and rDNA technology and address bioethical and biosafety issues related to animal transgenics
4. Elucidate the concept of nanosize, nanoparticle its structure and properties and connect the concepts of physics, chemistry and engineering principles in the study the nanoscale nature of the particles, synthesis and characterization of nanoparticles and its applications of nanoparticles in allied fields.
5. Explain the application of biotechnology in medical and its allied fields, gene therapy , genetic counseling, acquire knowledge about antisense technology, Pharmacogenetics, Toxicogenomics, Tissue engineering, Biomolecular engineering and the impact of these novel strategies on human population, Address the bioethical issues & concerned linked to medical biotechnology

Semester- IV

CELL AND MOLECULAR BIOTECHNOLOGY

Cell and Molecular Biotechnology is an application oriented field which mainly deals with the study of molecular mechanisms, exploitation of microorganisms and rDNA technology integrating with the omics technology

After completion of the course the students will be able to:

1. To know the concepts of Cell Biology and Molecular Biotechnology and explain the molecular mechanism of cell cycle and role of kinases in cell cycle regulation, understand the underlying principles of cell signaling, second messengers and signal transduction and to know the importance of molecular chaperons and their role in protein folding.
2. Elucidate the molecular techniques involved in gene manipulation and rDNA technology, explain the significance of gene transfer methods for the production of transgenics.
3. Connect the concepts of computational and molecular principles and their application in biological sciences and discuss the applications of Bioinformatics in related fields and acquire knowledge about omics technology, drug discovery, ADME and toxicological assays.
4. Apply their lab skills and experimental knowledge to perform varied Biotechnology, Bioinformatics experiments in labs.

MEDICAL VIROLOGY & PARASITOLOGY

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

1. To understand the essential concepts of virology which include the structure of different viruses, properties, replication, types of infection, how viruses cause disease, immune response to infection, treatment and the inhibitory action of the antiviral chemotherapy and laboratory diagnosis.
2. Acquire knowledge to take required measurements for prevention and control of viral diseases ie., virus vaccines and antiviral drugs.
3. To comprehend and appreciate the major and varied laboratory techniques and research approaches employed in the field of virology.
4. Understand transmission strategies, immune evasion and host responses contribute to viral pathogenesis
5. Acquire knowledge about pathogenesis and epidemiology in relation to the properties of a virus and the function of the immune system.

MICROBIAL BIOTECHNOLOGY

Microbial biotechnology is a branch of microbiology that includes the theory and experimental knowledge of production of diverse products using microorganisms.

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

1. Know the principles involved in preparation of Beverage and industrial Alcohols Understand the methods followed in the production of industrially important microbial Primary metabolites (Citric acid, Glutamic acid, Vit B12) , secondary metabolites (antibiotics) , and the physical and chemical conditions influencing their production.
2. Comprehend the importance of GMO in producing heterologous proteins and the technology used



3. Understand the importance of microbial enzymes, their applications , production process and relate biotransformation principles to biotransformation of steroids Conceptualize the principles and production process of different types of Vaccines and Biopesticides.

APPLIED MICROBIOLOGY

Applied microbiology is the study of the way the microbes can be utilized in various processes such as relevant enzymes and proteins

After successful completion of this course students are expected to be able to:

1. Ability to categorize the metabolic pathways in microorganisms and understand their roles in central metabolism and analyze the growth kinetics employed in industrial fermentation processes and employ in strain improvement
2. Learn the Processes involved in production of microbial metabolites like lipases, proteases and bacteriocins and enhance the efficiency of microorganisms to produce particular metabolite and produce the same at large scale
3. Understand the background of concepts and theories in plant pathology, its principles and practical applications to disease management especially cultural, chemical and biological control methods.
4. Gain a working knowledge in nanobiotechnology techniques and acquire the ability to use them to solve problems in bioengineering, biomedicine and agricultural/environmental issues.

COURSE OUTCOME OF BOTANY

SEMESTER –I MICROBIAL DIVERSITY OF LOWER PLANTS

On Completion of this Course students will be able

1. To gain knowledge about microbial diversity.
2. To have the ability to utilize the concept of mushroom cultivation.
3. To understand the phylogeny of plants.
4. To know about various plant diseases and their control measures.
5. To understand life cycles of different algal species.
6. To explore economic importance of algae & fungi.

SEMESTER –II BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS AND PALAEOBOTANY

On Completion of this Course students will be able

1. To understand the phylogeny from Bryophytes to Gymnosperms.
2. To know the evolution of sporophytes in bryophytes.
3. To understand the stellar evolution and seed formation habit in pteridophytes.
4. To gain knowledge about life cycles of gymnosperm plants.
5. To explain about fossils and fossilization.
6. To understand about geological time scale.

SEMESTER –II TAXONOMY OF ANGIOSPERMS AND MEDICINAL BOTANY

On Completion of this Course students will be able

1. To recognize the major groups of vascular plants and their phylogenetic relationships.
2. To gain proficiency in the use of keys and identification manuals for identifying any unknown plants to species level.
3. To explore the uses of plants as medicine by traditional indigenous approaches.
4. To understand different systems of medicine and their uses .
5. To explain how current medicinal practices are often based on indigenous plant knowledge.
6. To get introduced to different perspectives on treating ailments.

SEMESTER –IV PLANT ANATOMY, EMBRYOLOGY AND PALYNOLOGY

On Completion of this Course students will be able

1. To gain knowledge of plant cells , tissues and their functions.
2. To make connections between plant anatomy and the other major disciplines of biology.

3. To identify and compare structural differences among different taxa of vascular plants.
4. To know the structure and development of monocot and dicot embryos.
5. To compare the function and morphology of pollen grains.
6. Describe and illustrate modern and fossil spores and pollen grains.

SEMESTER – V CELL BIOLOGY & GENETICS

On Completion of this Course students will be able

1. To explain the structure of Cell components and their functions.
2. To have Knowledge about the structure, functions of special types of chromosomes and extra nuclear genome .
3. To describe cell division in plants.
4. To describe linkage ,crossing over and Genetic maps.
5. To have knowledge of mutations, nature and function of genes& processes of inheritance .

SEMESTER – V ELECTIVE –I [ECOLOGY AND BIODIVERSITY]

On Completion of this Course students will be able

1. To have knowledge on concepts and components of Ecosystem.
2. To understand ecological relationships between organisms and their environment.
3. To identify diversity of life forms in an ecosystem.
4. To explain community ecology & dynamics
5. To understand the role that biodiversity plays in conservation science.

SEMESTER – VI PLANT PHYSIOLOGY

On finishing of this Course students will be able

1. To understand plant physiological processes and metabolism.
2. To explain the role of micro nutrients in plant growth and development.
3. To relate photosynthesis with the formation of primary and secondary metabolites.
4. To clarify the physiology of flowering & photo periodism.
5. To have knowledge of stress physiology.

SEMESTER – VI ELECTIVE –III [TISSUE CULTURE AND BIOTECHNOLOGY]

On Completion of this Course students will be able

1. To explain the main techniques of in vitro culture of plant cells &tissues.
2. To know the methods used for the bio-production of plant secondary metabolites.
3. To have knowledge of basic concept of gene cloning& enzymes involved in it.
4. To Know the main techniques of genetic manipulation of plant organisms.
5. To explain the production of transgenic plants.

COURSE OUTCOMES OF BIOTECHNOLOGY

SEMESTER-I BS106 CELL BIOLOGY AND GENETICS

On completion of the courses students will be able

1. To understand the basic unit of the organism.
2. To differentiate the organisms by its cell structure.
3. To know Components of the Cell and their division.
4. To explain the arrangement of Genes and their interaction.
5. To describe the influence of environment on gene expression.
6. To understand extra nuclear inheritance, linkage & crossing over.

SEMESTER-II BS206 NUCLEIC ACIDS & BIOINFORMATICS

On completion of the courses students will be able

1. To Understand about the Nucleic acids
2. To know the structure of nucleic acid, types of Nucleic acid and its Forms.
3. To explain genome organization in Prokaryotes and Eukaryotes.
4. To describe Nucleic acids Replication, Recombination and its Repair Mechanisms.
5. To know how about the Interaction of Computer and Biology.
6. To understand the Knowledge about Protein and Genome Databases.
7. To understand about the Data Retrieval tools and its Utilization.
8. Applications of Bioinformatics in drug designing and Drug Discovery.

SEMESTER-III BIOCHEMISTRY AND BIostatISTICS

On completion of the courses students will be able

1. To have knowledge on Biomolecules, their importance and Classification .
2. To explain the properties of Biomolecules.
3. To describe the conversion of Biomolecules into Energy.
4. To describe the biophysical techniques for the Isolation, Identification and Quantification of Biomolecules.
5. To understand Biostatistical Analysis of the Biological Experiments.
6. To learn the Methodologies of Biostatistics and its application in selection of the Biological samples.

SEMESTER-IV MICROBIOLOGY AND IMMUNOLOGY

On completion of the courses students will be able

1. To gain knowledge about principle and application of various types of Microscopy.
2. To Classify and explain the structure and general characteristics of Microorganisms.
3. To prepare various Bacteriological, Algal, and Fungal Media.
4. To get insight in Primary and Secondary organs of Immune system.
5. To describe Antigenicity and factors affecting it.
6. To explain cell mediated immunity, Monoclonal antibody production and Hypersensitivity.

SEMESTER – V CORE – V [MOLECULAR BIOLOGY AND RECOMBINANT DNA TECHNOLOGY]

On completion of the courses students will be able

1. To explain genome organization in higher organisms.
2. To understand gene expression & regulation in prokaryotes .
3. To have knowledge of gene expression & regulation in eukaryotes.
4. To understand the steps involved in recombinant DNA technology.
5. To explain gene transfer techniques and their applications.

SEMESTER – V ELECTIVE -A [PLANT BIOTECHNOLOGY]

On completion of the courses students will be able

1. To understand basic concepts & totipotency of plant cells .
2. To explain the preparation of media for invitro culture of plant cells.
3. To have knowledge of production of secondary metabolites using cell suspension cultures.
4. To know the methods of conservation of plant germplasm.
5. To understand the applications of transgenic plants.

SEMESTER – VI CORE –VI [MICROBIAL TECHNOLOGY]

On completion of the courses students will be able

1. To understand methods of isolating micro organisms for industrial products.
2. To know good manufacturing practices.
3. To have knowledge of fermentation conceptand design.
4. To know the microbial production of products & their applications.
5. To explain the basic concept of food quality & Control.

SEMESTER – VI ELECTIVE –B [ENVIRONMENTAL BIOTECHNOLOGY AND BIODIVERSITY]

On completion of the courses students will be able

1. To get insight about types of environmental pollution.
2. To know the types of biomass used for bioenergy and biofuels.
3. To understand the production of biomethane ,biohydrogen and biofuels .
4. To explain the methods of composting of organic waste.
5. To understand the concepts and application of phytoremediation.

COURSE OUTCOMES OF ZOOLOGY

SEMESTER- I ANIMAL DIVERSITY-INVERTEBRATES

On completion of the courses students will be able

1. Classify Phylum Porifera with taxonomic Keys
2. Recognize the ecological role of Phylum Protozoa, Porifera & Helminthes
3. Identify the given Mollusca with respect to economic importance
4. List characteristics of Arthropoda
5. Create a model of pearl formation
6. Practice labeling diagrams

SEMESTER- II ECOLOGY, ZOOGEOGRAPHY AND ANIMAL BEHAVIOR

On completion of the courses students will be able:

1. To Describe Environmental Pollution and its control measures
2. To understand methods of wildlife and conservation and endangered species
3. To describe Innate and Acquired types of behavior
4. To identify Zoogeographical regions with their climatic and faunal peculiarities

SEMESTER-III ANIMAL DIVERSITY-VERTEBRATES AND DEVELOPMENTAL BIOLOGY

On completion of the courses students will be able:

1. Give examples of Amphibia and its parental care
2. Describe the Phylum Mammalian and its aquatic adaptations
Differentiate poisonous and non poisonous snakes
3. Illustrate Flight adaptation in birds
4. Analyze different types of foetal membranes
5. To identify the characters of Amphibia and its parental care

SEMESTER- IV CELL BIOLOGY, GENETICS & EVOLUTION

On completion of the courses students will be able:

CO1- Identify the primary components of the cell's cytoskeleton & their role in shape & function of cell.

CO2- Differentiate prokaryotes & Eukaryotes.

CO3- Explain causes and role of extinction in evolution

CO4- Identify chromosomal mutations and in-born errors of metabolism

CO5- Compare Darwinism & Lemarckism.

SEMESTER – V PHYSIOLOGY AND BIOCHEMISTRY

By the end of this course the student will able to:

1. Understand the human physiology and anatomy.
2. Remember the functioning of organ systems across the animal world.
Evaluate the chemical nature of life and life process.
3. Analyze structure and functioning of biologically important molecules.
Create the concept of Osmoregulation in different aquatic environments.
4. Understand biochemistry and physiology in terms of Biomolecules and metabolism.
5. Learn about the nature of enzymes, classification emphasizing inhibition and regulation.

APPLIED ZOOLOGY

By the end of this course the student will able to

- a. Understand different types of fisheries in India
- b. Apply Vermiculture and Vermi composting in organic farming
- c. Compare Indigenous and modern methods of extraction of honey in Apiculture Summarize Poultry breeding, Management of breeding stock & broilers.
- d. Practice managing the modern dairy farming & promote dairy farming as a self-Employment venture
- e. Summarize induced breeding and the fishing gears and crafts.

Understand the preservation and processing By-Products of fishes.

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

By the end of this course the student will able to:

1. Understand an intensive and in-depth knowledge to the students in Immunology and Biotechnology.
2. Remember the role of Immunology in human health and wellbeing.
3. Apply the modern biotechnological practices and approaches with emphasis in technology applications.
4. Apply comprehensive and practical understanding of basic immunological principals and applications.
5. Analyze humoral and cell mediated immunity and Learn about the different cells in immune system and their role in immunity.
6. Evaluate and appreciate the mechanism of Immune system.

AQUATIC BIOLOGY

By the end of this course the student will able to:

1. Compare Fresh water ecosystem & Lake as an ecosystem
2. Apply the methods of management of aquatic pollution
3. Identify types of Coral reefs & its conservation
4. Evaluate Physico-chemical characteristics of fresh water bodies
5. Animate adaptation of deep sea organisms

COURSE OUTCOMES OF GENETICS

SEMESTER – I CLASSICAL GENETICS

On Completion of the course the students will be able:

1. To enable the students , understand Mendelian inheritance.
2. To learn the concepts of Linkage.
3. To know the significance of organellar inheritance.
4. To understand the concept of sex determination and sex linked inheritance.
5. To study multifactorial inheritance.
6. To enable the students ,chromosome structure, chromatin organization and variation.

SEMESTER – II CYTO GENETICS

On Completion of the course the students will be able:

1. To study the cell division & chromosome segregation.
2. To understand the chromosome structure.
3. To know chromatin organization and variation.
4. To understand the applications of cell communication
5. To Understand Cell- signaling.
6. To learn the Dysregulation of cell cycle.

SEMESTER – III MOLECULAR GENETICS

On Completion of the course the students will be able:

1. To study the structure of Nucleic acids.
2. To Understand the gene expression.
3. To know the regulation in Prokaryotes.
4. To Understand the gene expression.
5. To study gene regulation in Eukaryotes.
6. To explore the applications of Gene Mutation and Repair

SEMESTER – IV MICROBIAL GENETICS

On Completion of the course the students will be able:

1. To study Nuclear Genome Organisation.
2. To enable the role of vectors and their use.
3. To explore the applications of microbial technology.
4. To know the Genes and gene numbers.
5. To study fine structure of the gene.
6. To Understand the process of gene transfer.

SEMESTER – V BIOSTATISTICS & BIOINFORMATICS

1. To study the graphical methods for representing grouped data
2. To understand the binary, arithmetic and logical operations.
3. To know basics in handling bioinformatics tools.
4. To understand the applications of biological databases.
5. To insight into sequence alignment and the concept of phylogeny.
6. To learn the axioms of probability.

SEMESTER – V PLANT GENETICS & BIOTECHNOLOGY

1. To study fine structure of plant Gene
2. To enable the role of secondary metabolites and their use.
3. To explore the applications of Plant tissue culture and Biotechnology.
4. To know the organogenesis and somatic embryogenesis
5. To create strategies of disease resistance.
6. To Understand the process of gene transfer.

SEMESTER – VI POPULATION GENETICS & EVOLUTION

1. To study the structure of population and the concept of gene pool, deme and panmictic unit.
2. To explore the extension of Hardy Weinberg law and establishment of Hardy-Weinberg equilibrium for single gene loci, multiple alleles, X- linked gene.
3. To understand the effect of systemic and dispersive forces on the population.
4. To know the inbreeding and its effect on genotype frequencies.
5. To understand the origins of genomes and acquisition of new genes.
6. To analyze the Genetic Variation, Molecular Evolution and Quantitative inheritance.

SEMESTER – VI CELLULAR& MOLECULAR IMMUNOLOGY

1. To study the innate and acquired immunity.
2. To enable the role of monoclonal and polyclonal antibodies and their applications.
3. To explore the antigen – antibody interactions in understanding diagnosis.
4. To know the various immunological techniques such as ELISA, Western BLOT, etc.
5. To analyze autoimmunity and mechanism of auto immune diseases.
6. To Understand the various classes of Immunoglobulin's.

UG COURSE OUTCOMES BIOCHEMISTRY

B.Sc. I YEAR-SEMESTER-I CHEMISTRY OF BIOMOLECULES

After studying this paper, biochemistry graduate students will be able to:

1. Understand biochemistry at the atomic level, draw molecules and reactions involved with biomolecules.
2. know the various weak acids and bases, biological buffers present in our body
3. Learn the molecular structures of 20 amino acids, differentiating essential and non-essential amino acids, biologically important modified amino acids and their functions.
4. Recognize the structural levels of organization of proteins, 3D structure of proteins, its functions, denaturation (hemoglobin, myoglobin etc.).
5. Understand the difference between monosaccharides, disaccharides and polysaccharides. storage and structural polysaccharides.
6. Have a clear picture of biomembranes, behavior of amphiphatic lipids in water, formation of micelles, bilayers, vesicles, membrane composition and fluid mosaic model
7. Recognize lipid and porphyrin structures, lipoproteins and functions of prostaglandins.
8. Describe how lipids, cholesterol, prostaglandins etc. are synthesized, emphasizing the genetic defects of lipid metabolism.
9. Understand the relationship between the properties of macromolecules and cellular activities, cell metabolism and chemical composition.
10. Learn the molecular structures of 20 amino acids acid base properties, differentiating essential and non-essential amino acids, biologically important modified amino acids and their functions.

SEMESTER-II CHEMISTRY OF NUCLEIC ACIDS & BIOCHEMICAL TECHNIQUES

After studying this paper, biochemistry graduate students will be able to:

1. Understand biochemistry at the atomic level, draw molecules and reactions involved with biomolecules.
2. To know the various structures of DNA ,RNA ,nucleosides and nucleotides.
3. Learn the molecular structures of DNA double helix ,denaturation , biological importance of RNA, types of RNA and their functions.
4. Recognize the reassociation kinetics, cot curves and their significance. find the T_m values ,hyperchromic effect.
5. Understand the difference between colorimetry and spectroscopy, Beer Lamberts law and its limitations.
6. To study the principles involved in fluorimetry and centrifugation.
7. To have a clear picture of principles and instrumentation in TLC, paper chromatography, gel filtration, ion-exchange and affinity chromatography.
8. Describe/recognize photochemical and spectral characteristics of nucleic acids.
9. Understand the relationship between laws of absorption and molar extinction coefficient.

B.Sc. II YEAR SEMESTER-III

After studying this paper, Biochemistry Graduate students will be able to:

1. Describe structure, functions and the mechanism of action of enzymes. Learning kinetics of enzyme catalysed reactions and enzyme inhibitions and regulatory process. Ability to perform immobilization of enzymes. Exposure of wide applications of enzymes and future potential.
2. Understand the fundamental energetics of biochemical processes, chemical logic of metabolic pathways. Knowing in detail about concepts to illustrate how enzymes and redox carriers and the oxidative phosphorylation machinery occur.
3. Understand the utilization of proton gradient to drive the formation of high energy bonds and high energy compounds.
4. To provide a deeper insight in to the fundamentals of enzyme structure and function and kinetics of soluble and immobilized enzymes. Discussion on current applications and future potential of enzymes.
5. Complete understand of rate of reactions and order of reactions, and inhibitions and their kinetics. To gain knowledge on enzyme catalysis and isoenzymes and on multienzyme complexes.
6. Understanding the concepts of standard redox potential and the enzymes in biological oxidations. A brief account of Mitochondria and chloroplast structure, ATPase (oxidative phosphorylation) and C3 and C4 cycles in plants.

COMPUTATIONAL BIOCHEMISTRY

By the end of this course the student will able to learn:

1. To have basic knowledge of Modern Biology and Genomics.
2. Introduction to tools of Bioinformatics
3. To understand the advantages and disadvantages of different machine learning techniques in bioinformatics.
4. To understand how theoretical approaches can be used to model and analyze complex biological systems.
5. The student can explain which type of data can be available from the most common protein sequence and structure databases like UNIPROT and CATH, Genbank.
6. The student can explain principles of computational methods for the prediction of secondary structures, elements from protein sequence, homology modeling

SEMESTER-IV INTERMEDIARY METABOLISM

By the end of the course the students will able to learn:

1. The student will be able to explain the general design of metabolic pathways based on Bio Energetic principles.
2. Describe how carbohydrates (glucose & glycogen), lipids (fatty acids , TAG), nucleic acids are synthesized, degraded and regulated and the role of enzymes
3. Have a holistic view on metabolism & recognize how different pathways are functionally interlinked & how they are regulated by intracellular and extracellular signals.
4. Recognize How metabolism can be related to related to issues in lifestyle, health, disease.
5. To study the Inborn errors of metabolism (Gout, Maple syrup disease)

MEDICAL LAB TECHNOLOGY

By the end of the course the students will able to learn:

1. To compare and contrast clinical laboratory procedures, interpret data & predict the pathogen isolated.
2. To distinguish normal and abnormal microscopic characteristics of blood cells through performance of complete blood count.
3. Compare different antibiotic susceptibility test methods, interpret results of antimicrobial susceptibility tests.
4. Demonstrate technical skills by following established procedures & Processing biological specimen analysis.
5. To study the Importance of Biomarkers and to Correlate laboratory detection of tumour markers with cancers and metastatic disease.

SEMESTER-V MOLECULAR BIOLOGY

By the end of the course the students will able to learn:

- a. To understand the basic concepts like gene , Genome , Chromosome and their structures and organization in both prokaryotes and eukaryotes
- b. To study and understand why nucleic acid is called Genetic material.
- c. To know different steps in the central dogma of molecular biology, enzymes involved in synthesis of DNA, RNA and protein.
- d. Learn the basic steps involved in DNA replication in prokaryotes emphasizing the enzymes involved in different types of replication.
- e. To learn the events in the synthesis of RNA in both prokaryotes and eukaryotes, their regulation, and post transcriptional modifications.
- f. To study about the genetic code, and its nature
- g. To learn the mechanism involved in the protein synthesis and the modification seen on the protein after its synthesis.
- h. To understand the concept of operon and understand their functioning with lac and trp operons.

PHYSIOLOGY AND CLINICAL BIOCHEMISTRY

By the end of the course the students will be able to learn:

1. After studying this paper, biochemistry graduate students will be able to:
2. Understand biochemistry and patho physiology associated with performed in Clinical biochemistry laboratory.
3. Have a good knowledge on Nervous & Muscular systems helps in add on courses such Acupuncture, Physiotherapy.
4. Understand the nutritional requirements and the role of food and nutrients in health and disease processes and describing the methods used to carry out nutritional methods.
5. Understand the clinical history perform physical examination, suggest investigations, interpret the results and documentary findings.
6. To understand how living systems function from molecular and cellular to be systems level emphasizing an integrative approach to study the biological approach of the human body.
7. To understand the relationship between food and a healthy body more specifically emphasizing on how nutrients are digested, absorbed, transported and metabolized, stored and eliminated by the body.

SEMESTER-VI NUTRITION AND IMMUNOLOGY

After studying this paper, biochemistry graduate students will be able to:

1. Understand the nutritional requirements and the role of food and nutrients in health and disease processes and describing the methods used to carry out nutritional methods.
2. To understand the relationship between food and a healthy body more specifically emphasizing on how nutrients are digested, absorbed, transported and metabolized, stored and eliminated by the body.
3. To learn about various fat soluble and water soluble vitamins its source, structure, biochemical roles and its deficiency disorders.
4. Learn about the organization, structural features and functions of the immune system.
5. To describe the components of the immune system and how cells and organs play an important role in the immune responses.
6. Explain the specific interactions of antigens and antibodies in blood grouping.

7. Critically understand the abnormal manifestations of the immune response in the form of Hypersensitive reactions and autoimmune diseases.
8. Study the principle and applications of various immuno techniques ranging from precipitation and agglutination reactions to ELISA, Radio immunoassay.
9. To study about the role of Vaccines and types or mode of their action.
10. To know the fundamentals of graft rejection and MHC proteins.

SEMESTER-VI MICROBIOLOGY AND R DNA TECHNOLOGY

After studying this paper, biochemistry graduate students will be able to:

1. To know the brief history of microbiology and classification of microorganisms.
2. To isolate bacteria and learn to prepare media for the microbial growth.
3. Understand the morphological differences of different microorganisms, identifying industrially and economically useful microorganisms and applying them in different fields.
4. Learn gene cloning for the expression of desired gene, amplifying the DNA, which is applied in various genomic level researches.
5. To learn DNA sequencing methods such as Maxam Gilbert and Sanger's methods.
6. Gain knowledge about Recombinant DNA technology by studying about various Vectors and Restriction Enzymes involved.
7. Study of Various Expression Systems and Molecular Markers.
8. Application of R-DNA technology and use of Restriction enzymes in construction of various vectors and libraries such as c- DNA libraries.
9. Screening of the libraries with the help of " Reporter Genes" and Molecular Markers such as RFLP, RAPD, AFLP.
10. To know the various applications and production of gene cloning such as Insulin, hGH, Bt cotton.
11. Outlines of blotting techniques such as southern, northern and western.

PG COURSE OUTCOMES-BIOCHEMISTRY

I YEAR I SEMESTER - CHEMISTRY AND METABOLISM OF PROTEINS AND LIPIDS AND PORPHYRINS(CORE)

After studying this paper, Biochemistry Postgraduate students will be able to:

1. Understand biochemistry at the atomic level, draw molecules and reaction mechanisms perfectly.
2. Understand in detail about amino acid structures, types of amino acids, classifications, structure of proteins and types of proteins.
3. Learn the molecular structures of 20 amino acids, differentiating essential and non-essential amino acids, biologically important modified amino acids and their functions.
4. Recognize the structural levels of organization of proteins, 3D structure of proteins, its functions, denaturation (hemoglobin, myoglobin etc.).
5. Learn how amino acids and proteins are metabolized, emphasizing the role of few intermediates of their metabolism, monitoring the deficiency and abundance disorders of amino acid metabolisms and the role of enzymes in the regulation of the pathways
6. Describe/recognize lipid and porphyrin structures, lipoproteins and functions of porphyrins (heme, chlorophyll etc.).
7. Describe what happens: - when lipids are metabolized, cholesterol, prostaglandins etc. are synthesized, emphasizing the genetic defects of lipid metabolism.
8. Understand the relationship between the properties of macromolecules and cellular activities, cell metabolism and chemical composition.

CHEMISTRY AND METABOLISM OF CARBOHYDRATES, VITAMINS AND NUCLEIC ACIDS (CORE)

At the end of the Course the student would be able to

1. Understand in detail the structure and physico chemical properties of carbohydrates from monosaccharide to polysaccharides.
2. Learn the significance of structural and storage polysaccharides in nature

3. To study the structures of PG, GAG and other complex Polysaccharides.
4. Describe the physiology of the carbohydrate Digestion in mammals.
5. Illustrate the metabolism of carbohydrates through various anabolic and catabolic pathways like glycolysis, Krebs's cycle, Glycogen metabolism, glucuronic acid cycle etc.
6. Relate the structure of DNA with its function in Replication and gene expression that include both transcription and translation.
7. Understand the difference between the water soluble and fat soluble vitamins and their key role in the metabolism as coenzymes.
8. Acquire the knowledge on the clinical consequences of nutritional deficiency.
9. Present a case study on the nutrition deficiency disorder.

BIO-ANALYTICAL TECHNIQUES (CORE)

After studying this paper, biochemistry postgraduate students will be able to:

1. Understand the difference between UV visible and fluorescence spectroscopy and colorimetry.
2. To identify different organic compounds using ESR, NMR, ORD and CD the various principles and instrumentation behind them
3. To differentiate between paper, ion exchange and affinity chromatography, calculate R_f value from a chromatogram
4. Exhibit a knowledge base in handling different chromatographic techniques and knowing the sequences of different proteins.
5. Explain the dangers and safety precautions associated with xrays and identify the various isotopes used in radiography.
6. Learn fundamental principles behind centrifugation and electrophoresis and apply them practically.
7. Capable to choose and apply suitable separation techniques to identify different biomolecules.
8. Understand the intersection of life and information sciences, using different sequencing and mapping like zymography, SDS-PAGE, DNAfoot printing, southern and northern blots and applying them at genome level.

BIOENERGETICS AND CELL BIOLOGY (CORE)

After studying this paper, biochemistry postgraduate students will be able to:

1. Describing structure, functions and the mechanism of action of enzymes. Learning kinetics of enzyme catalysed reactions and enzyme inhibitions and regulatory process. Ability to perform immobilization of enzymes. Exposure of wide applications of enzymes and future potential.
2. Understand the fundamental energetics of biochemical processes, chemical logic of metabolic pathways. Knowing in detail about concepts to illustrate how enzymes and redox carriers and the oxidative phosphorylation machinery occur.
3. Understanding the utilization of proton gradient to drive the formation of high energy bonds and high energy compounds.
4. Learning the detailed structures of eukaryotic and prokaryotic cells and methods used to examine them. Acquiring knowledge on cell-cell interactions, Cell cycle cell division and apoptosis.
5. To understand a basic and comprehensive knowledge of eukaryotic and prokaryotic cells. A detail description of composition, structure and function of organelles and cell organelles and other cellular components.
6. To provide a deeper insight in to the fundamentals of enzyme structure and function and kinetics of soluble and immobilized enzymes. Discussion on current applications and future potential of enzymes.
7. Relating entropy to law of thermodynamics and Free energy and its relation to chemical equilibria. Detail description of Coupled reactions and their role in metabolism and Chemiosmotic hypothesis of ATP synthesis.

SEMESTER-II

ENZYMOLGY

After studying this paper, biochemistry postgraduate students will be able to:

1. Describe structure, functions and the mechanism of action of enzymes. Learning kinetics of enzyme catalysed reactions and enzyme inhibitions and regulatory process, Enzyme activity, Enzyme Units, Specific activity
2. Have a deeper insight in to the fundamentals of enzyme structure and function and kinetics of soluble and immobilized enzymes. Discussion on current applications and future potential of enzymes.
3. To perform immobilization of enzymes and understand the wide applications of enzymes and future potential.

4. Have a complete understanding of rate of reactions and order of reactions, and inhibitions and their kinetics. To gain knowledge on enzyme catalysis and isoenzymes and on multienzyme and multienzyme complexes.
5. Relate the entropy to law of thermodynamics and Free energy and its relation to chemical equilibria.

MOLECULAR BIOLOGY

After studying this paper, biochemistry postgraduate students will be able to:

1. Understand different steps in the central dogma of molecular biology, enzymes involved in synthesis of DNA, RNA and protein.
2. Learn the basic steps involved in DNA replication in prokaryotes and eukaryotes, emphasizing the enzymes involved in different types of replication .
3. Describe the in vitro replication of DNA by PCR, most applicable technique of all the molecular works.
4. Understand and explain the different damages caused to DNA, the mechanisms involved in repairing DNA (direct and indirect methods) and DNA repair defects diseases.
5. Understand the purpose of the cells performing transcription and translation, learning steps involved in gene expression highlighting the enzymes and inhibitors of transcription and translation .Role of Transcription and Translation further
6. Explain the nature of signals, sorting, SRP Receptor in the targeting of proteins to the endoplasmic reticulum and to know that chaperones prevent faulty folding of other proteins.
7. Comprehend that ubiquitin is a key molecule in protein degradation and recognize the important role of transport vesicles in intracellular transport.
8. Learn that many diseases result from mutations in genes encoding proteins involved in intracellular transport and be familiar with the terms conformational diseases and diseases of proteostatic deficiency.
9. Present hypothesis and select, adapt and conduct molecular and cell-based experiments to either confirm or reject the hypothesis.

BIOCHEMICAL GENETICS MODEL ORGANISMS (CORE)

At the end of the Course the student would be able to

1. Learn and appreciate the history of the genetics through the study on various experimental approaches.
2. Understand the Mendelian inheritance and the deviations from the pattern.
3. Have a complete knowledge of the causes and consequences of types of mutations and methods of isolation.
4. Construct the linkage maps for genes and make their own family pedigree and report which pattern of the inheritance it follows.
5. Study the population genetics based on Hardy Weinberg law.
6. To study about Horizontal gene transfer Mechanisms
7. Construct a genome map of the micro-organisms through the methods of gene transfer such as Transformation, Transduction and conjugation.
8. Understand the role of the model organisms are used to decipher a specific biological function.\ with typical examples
9. Present a paper on the novel approaches in Gene targeting using a model organism

ENDOCRINOLOGY AND METABOLIC DISORDERS

At the end of the course the student would be able to :

1. Study the historical experiments that lead to the discovery of various hormones.
2. Deeply understand the communication between the nervous system and the endocrine system.
3. Learn the structure, functions and the disorders associated with the various hormones starting from the pituitary hormones to the gonadal hormones.
4. Appreciate and analyze the endocrine regulation of the various metabolisms such as carbohydrate metabolism, Protein metabolism, calcium homeostasis, menstrual cycle, pregnancy and menopause.
5. Apply the knowledge of hormones in assay of hormones such as T3, T4 and TSH and understand the strategy behind contraception.
6. Learn the etiology of the disorders associated with the carbohydrate, aminoacid, lipid and nucleic acid metabolism.
7. Present a case study on a hormonal and a metabolic disorder.

GENE REGULATION & GENETIC ENGINEERING

At the end of the Course the student would be able to:

1. Understand “ Gene Regulation mechanism in Prokaryotes, Viruses and Eukaryotes”
2. Differentiating between the different mechanisms involved, depending on the organism and the process involved in regulation.
3. Gain knowledge about Recombinant DNA technology by studying about various Vectors and Restriction Enzymes involved.
4. Study of Various Expression Systems and Molecular Markers
5. Clear & Lucid understanding of the Various Regulatory mechanisms and their Applications Isolation of Genomes
6. Application of R-DNA technology and use of Restriction enzymes in construction of various vectors and libraries such as c-DNA & Genomic libraries
7. Screening of the libraries with the help of “ Reporter Genes” and Molecular Markers such as RFLP,RAPD, AFLP.

IMMUNOLOGY AND IMMUNOTECHNOLOGY

At the end of the Course the student would be able to:

1. Learn about the landmarks in the field of immunology and appreciate the efforts of the various scientists who contributed to the development of the field.
2. Describe the components of the immune system and how cells and organs play an important role in the immune responses.
3. Explain the specific interactions of Antigens and antibodies and the diversity of antibodies developed at the germ line DNA.
4. Complete knowledge of the molecular mechanisms and kinetics of the immune responses , both humoral and cell mediated immunity.
5. Understand the role of the HLA antigens in the transplantation of the various organs and graft rejection.
6. Critically understand the abnormal manifestations of the immune response in the form of Hypersensitive reactions and autoimmune diseases.
7. Study the principle and applications of various immuno techniques ranging from precipitation and agglutination reactions to ELISA, Radio immunoassay and flow cytometry.
8. To study about the role of Vaccines and types or mode of their action
9. Present research articles pertaining to novel vaccines and immuno techniques.

NUTRITION AND CLINICAL BIOCHEMISTRY

After studying this paper, Biochemistry Postgraduate students will be able to:

1. Understand different proximate analysis of foods, their nutrient contents, spoilage and their prevention.
2. Learn the RDA for infants, children, adults and expecting mothers, the various nutritional policies and nutritional interventional programmes.
3. Describe the various disorders like anorexia, bulimia, kwashiorkor.
4. Understand and explain the acid-base and water-electrolyte balance in the body.
5. Understand the difference between plasma, serum, normal and abnormal constituents in various body fluids. Blood clotting mechanism and anticoagulants.
6. Explain the nature and function of various enzymes, normal levels and elevated levels in various diseases.
7. Comprehend that blood is a universal fluid for carrying different minerals, nutrients, proteins etc to and from various tissues.
8. Learn that many diseases result from imbalance in certain enzymes and helps in diagnosis of liver, cardiac, gastrointestinal, kidney diseases.
9. To create awareness on various National, International Agencies to promote Nutrition.
10. Present hypothesis and select treatments related to various deficiencies and diseases.

HUMAN PHYSIOLOGY & XENOBIOTICS

At the end of the Course the student would be able to:

1. Understand Anatomy & Physiology of various systems in Human which gives a clear picture about various systems and their respective disorders.
2. Acquire good knowledge on Nervous & Muscular systems helps in add on courses such Acupuncture, Physiotherapy.
3. Metabolism of Xenobiotics in Liver can form the basis for courses such as Drug Discovery, Bioinformatics, Cheminformatics.
4. Alterations in Functions of Liver help in understanding various disorders associated with liver and their clinical significance.

5. A Fair knowledge on Human Reproductive Biology provides information with the system, hormones involved, disorders associated with them in, and treatments in both genders respectively.
6. Understand “Anatomy & Physiology of various Systems such as Nervous system, Muscular system, Reproductive system, Liver & metabolism of Xenobiotics in Humans.”
7. Understand the importance of enzymes such as SGOT, SGPT, ALP act as marker enzymes and are used in assessing the functioning of liver

SEMESTER-IV

BIostatistics AND Bioinformatics

At the end of the Course the student would be able to:

1. Understand the Sampling techniques and interpret the data based on the measures of the central tendency.
2. Learn the discrepancies and deviations of the variable based on measures of dispersion
3. Study the relationship between variables based on correlation and regression analysis
4. Deduce the probable outcomes of an experiment based on observations following laws of probability and also assess the significance of the interpretation through tests of significance such as t-test.
5. To study the principles of Genomics, Proteomics
6. Design the Experiments and also study the Quality control mechanism in Biochemistry.
7. To understand the importance and applications of computational methods in Biology
8. Acquire knowledge and awareness on basic informatics tools and to extract or retrieve information from Biological databases
9. Learning the High-throughput technologies and using them to solve problems related to databases.
10. To understand the significance of in silico lab trials and probable outcomes
11. Using Bioinformatics tools in conducting research.

CELL-CELL SIGNALING AND SIGNAL TRANSDUCTION

After studying this paper, students will be able to:

1. Acquire knowledge on basic concepts of Biology like cell, and the molecules in the extracellular matrix , their function in signaling.
2. Understanding ligand receptor interaction and their role in signal transductions
3. Understand importance of signal cascades and their response specificity in signaling events.
4. Learn how receptors carry different extracellular signals by different mechanisms in prokaryotes like bacteria, and eukaryotes like yeast, plants and animals.
5. Understand the regulation of cell cycle and how it leads to cancer
6. Describe the oncogene and proto-oncogene and their relation to cell proliferation
7. Describe the role of tumor suppressor genes in protecting the normal cell from becoming cancer cell and apply the knowledge to devise new methodologies in cancer treatment.

BACTERIOLOGY AND VIROLOGY

After studying this paper, students will be able to:

1. Understand the morphological differences of different microorganisms, identifying industrially and economically useful microorganisms and applying them in different fields
2. Master aseptic techniques and be able to perform routine culture handling tasks aseptically.
3. Know the various physical and chemical growth requirements of bacteria and to know various industrially important microorganisms.
4. Exhibit knowledge of viruses, their classification based on various factors.
5. Understand the architecture of viruses.
6. Understand interactions between viruses and the host immune systems.
7. Comprehend the various methods of isolation, propagation, and cultivation of viruses.
8. Analyze the bacteria present in air, water, and soil and applying the knowledge in day to day life.
9. These are diseases that have recently appeared within a population to those whose incidence or geographic range is rapidly increasing/threaten to increase in the near future.

BIOTECHNOLOGY

After studying this paper, biochemistry postgraduate students will be able to:

1. The ability to develop novel biotechnology ideas and products.
2. Master skills associated with screening of industrially important strains.
3. Know the various vaccines and their production.
4. Exhibit a knowledge of various case studies in plant genomes and genetically modified foods.
5. Understand the architecture of protein designing, fusion proteins, methods of drug design and delivery.
6. Understand production of high value therapeutics, antibody engineering, gene knock out experiments, human gene therapy.
7. Comprehend the various methods of microbial mining, bioremediation and production of microbial polysaccharides.
8. Analyse the genetically modified foods and applying the knowledge in maintaining health and lifestyle.
9. Importance of GM foods which are prepared for using recombinant DNA technology .its pros and cons.

PHYSICS COURSE OUTCOMES-UG

SEMESTER – I MECHANICS

On successful completion of this course students will:

1. Understand integration of vectors
2. Derive Stoke's , Greens and Gauss theorems
3. Understand Collisions in one and two dimensions
4. Understand the relation between scattering cross section and impact parameter
5. Understand the properties of materials
6. Identify and apply the laws of mechanics along with the necessary mathematics for solving numericals
7. Gain knowledge on Central forces – definition and examples, Conservative nature of central forces, Conservative force as a negative gradient of potential energy, Equation of motion under acentral force
8. Derive Kepler's laws, Coriolis force and its expressions

SEMESTER II - WAVES AND OSCILLATIONS

On successful completion of this course students will:

1. Understand the concepts of mechanics, acoustics and the properties of matter
2. Understand physical characteristics of SHM and obtaining solution of the oscillator using differential equations
3. Calculate logarithmic decrement relaxation factor and quality factor of a harmonic oscillator
4. Use Lissajous figures to understand simple harmonic vibrations of same frequency and different frequencies
5. Solve wave equation and understand significance of transverse waves
6. Solve wave equation of a longitudinal vibration in bars free at one end and also fixed at both the ends.
7. Obtain boundary conditions of a longitudinal vibration in bars free at one end and also fixed at both the ends
8. Gain knowledge on applications of transverse and longitudinal waves.

SEMESTER III - THERMODYNAMICS

On successful completion of this course students will:

1. Gain knowledge in Kinetic theory of gases
2. Understand the process of thermal conductivity, viscosity and diffusion in gases
3. Understand the nature of thermodynamic properties of matter like internal energy, enthalpy, entropy, temperature, pressure and specific volume
4. Understand the efficiency of Carnot's engine.
5. Understand the significance of first law and second of thermodynamics
6. Understand implications of the second law of thermodynamics and limitations placed by the second law on the performance of thermodynamic systems
7. Evaluate entropy changes in a wide range of processes and determine the reversibility or irreversibility of a process from such calculations.
8. Understand the interrelationship between thermodynamic functions and ability to use such relationships to solve practical problems.

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SEMESTER IV-OPTICS

On successful completion of this course students will:

1. Gain knowledge on various theories of light
2. Acquire skills to identify and apply formulas of optics and wave physics
3. Understand the properties of light like reflection, refraction, interference, diffraction etc
4. Understand the applications of diffraction and polarization.
5. Understand the applications of interference in design and working of interferometers.
6. Understand the resolving power of different optical instruments.
7. Gain knowledge on working of holography and their applications in various fields.
8. Gain knowledge in optical fiber and their applications in communication

SEM –V: ELECTROMAGNETISM

On successful completion of this course students will:

1. Gain Knowledge on the basic concepts of electric and magnetic fields.
2. Acquire knowledge on the concept of magneto statics.
3. Learn different laws of Magneto statics
4. Understand the concept on electromagnetic induction and applications.
5. Acquire knowledge how to apply electromagnetic induction laws to Solenoid, Toroid etc.
6. Gain knowledge on EM waves propagation and their properties.

SEM –V - SOLID STATE PHYSICS

On successful completion of course student will:

1. Understand the relation between the microscopic and macroscopic properties of solids.
2. Learn the basics of Magnetism and also the properties of dielectrics.
3. Learn the energy band formation in solids and understand the classification of solids based on band structure.
4. Study the different types of Lasers and also the phenomenon of Superconductivity

SEM VI- MODERN PHYSICS

On successful completion of the course, the students will:

1. To understand the difference between Atomic and Molecular spectroscopies.
2. Understand the intuitive ideas of the Quantum physics and Nuclear physics.
3. Derive Schrodinger time dependent and time independent wave equations
4. To understand dual nature of matter
5. Gain knowledge on classification of various crystal systems
6. Understand the basics of crystallography, x-ray diffraction and Super conductivity.
7. Students will develop a comprehension of the Current basis of broad knowledge in Modern physics.
8. Learners will build on a critical thinking, analytical reasoning, and problem solving skills.

SEM –VI - BASIC ELECTRONICS

1. Study basics of semiconductors & devices and their applications in different areas.
2. Identify the unique vocabulary associated with electronics and learn the basic concepts of Semiconductor diodes such as P-N junction diode, Zener diode and their characteristics
3. To apply the basics of diode to describe the working of rectifier circuits such as Full and half wave rectifiers and solve examples on rectifiers for parameters such as Capacitance, load and source effect, line and load regulations, and circuit current.
4. Learn how to draw the structure of bipolar junction transistor and gain Knowledge on the operation of each device in terms of junction bias voltage and charge carrier movement. Identify and explain the various current components in a transistor.
5. Gain knowledge on the concepts of the amplifier circuit for given specification and analyze them to discuss oscillator principles, oscillator types, and frequency stability as it relates to its operation. modulation techniques.
6. Acquire Knowledge on different number system. Solve examples on converting one form of number system to another form, Boolean laws and theorems, the different logic gates using truth table. Analyze and design different adder circuits.
7. Understand the concept of Network elements and network theorems

PG COURSE OUTCOMES

SEMESTER I - MATHEMATICAL PHYSICS

On successful completion of course student will be able to

1. Solve differential equations like Legendre, Bessel and Hermite that are common in physical sciences.
2. Solve the different partial differential equations encountered in physical problems and draw inferences from solutions.
3. Solve transfer functions in Instrumentation using Laplace transforms.
4. Apply Fourier transforms in Holography.
5. Apply Matrices in the study of electrical circuits, Quantum Mechanics and Optics.
6. Apply the knowledge of Tensors to understand phenomenon like stress and strain.

CLASSICAL MECHANICS

On successful completion of course student will be able to :

1. Understand basic mechanical concepts related to discrete and continuous mechanical systems and also Cyclic coordinates and conservation theories
2. Apply Newton's laws of motion and conservation law of energy, linear and angular momentum to solve advanced problems involving the dynamic motion of classical mechanical system.
3. Solve the equations of motion for complicated mechanical systems using the Lagrangian and Hamiltonian formulations of classical mechanics.
4. Explore the application of Hamilton's equations in solving the equation of motion of a particle in a central force field, projectile motion of a body.

QUANTUM MECHANICS

On successful completion of course student will:

1. Understand and explain the differences between classical and quantum mechanics
2. Learn operator formalism for observables and basic commutation relations.
3. Solve Schrödinger equation for simple potentials like linear Harmonic oscillator and Hydrogen atoms.
4. Understand the space, time and displacement symmetries.

5. Evaluate the eigen values of L and J vectors.
6. Evaluate CG coefficients for different values of total angular momentum vector.

SOLID STATE PHYSICS

On successful completion of course student will:

- a. Understand different types of crystal structures in terms of the crystal lattice and the basis of constituent atoms.
- b. Understand the theory of X-ray diffraction in the reciprocal lattice (k-space) formalism.
- c. Apply the theory of lattice vibrations (phonons) to determine thermal properties of solids.
- d. Study the problem of electrons in a periodic potential, examine its consequence on the band-structure of the solids.
- e. Gain knowledge about the experimental techniques for crystal growth from solution and melt.

SEMESTER II

ELECTROMAGNETIC THEORY

On successful completion of course student will:

1. Acquire knowledge on general wave equation using Maxwell's equations and able to derive Laplace equations for electrostatic potential in Cartesian, spherical and cylindrical coordinates
2. Analyze scalar and vector magnetic potentials and the propagation of EM waves in different media
3. d vector magnetic potentials and the propagation of EM waves in different media for
4. Understand the propagation of EM waves in bounded and unbounded media & Boundary conditions EDB and H.
5. Understand poynting theorem and its physical significance.
6. Analyze Fresnel relations- Reflection (R) and Transmission (T) coefficients. Brewster's angle.
7. Have an idea on the concept of EM radiation of Inhomogeneous wave equation, harmonically oscillating source.

STATISTICAL MECHANICS

On successful completion of course student will:

1. Gain knowledge about classical and quantum statistical mechanics, including Boltzmann, Fermi-Dirac, and Bose-Einstein statistics.
2. Apply the formalism of statistical mechanics and probability theory to derive relations between thermo dynamical quantities
3. broad understanding of Statistical Mechanics, and show a critical awareness of the significance and importance of the topics, methods and techniques.
4. Understand the physical statistics and its relation to information theory and able to Solve statistical mechanics problems for simple non-interacting systems,
5. Understand the phase transitions and universality in second order phase transitions.

QUANTUM MECHANICS II

On successful completion of course student will:

1. Understand the kinematics of scattering process.
2. Evaluate the partial wave analysis using Born approximation method.
3. Apply time Independent perturbation theory for non degenerate case.
4. Gain knowledge on WKB approximation method to study alpha decay.
5. Remember time dependent perturbation theory
6. Analyze the interaction of an atom with electromagnetic radiation and the relativistic quantum mechanics using Klein Gordon equation
7. Explore the properties of gamma matrices.

ELECTRONICS

On successful completion of course student will:

1. Acquire knowledge of operational amplifier circuits and their applications.
2. Gain knowledge and evaluate the Boolean expressions, combinational logic circuits and simplifications using karnaugh maps.
3. Analyze the operation of decoders, encoders, multiplexers, adders and subtractors.
4. Understand the working of latches, flip-flops, designing registers, counters, a/d and d/a converters.
5. Design and Analyze synchronous and asynchronous sequential circuits.

6. Interpret the architecture, instruction set and also practice the basic programs of 8085 microprocessor.

SEMESTER III-MODERN OPTICS

On successful completion of course student will:

1. Gain knowledge on laser rate equations for Two, Three, Four-level laser systems.
2. Understand Einstein relations for emission and absorption of radiation
3. Gain knowledge on classification of laser systems
4. Gain knowledge on application of various laser systems
5. Understand basic principles of holography and its applications
6. Understand the concept of recording and reconstruction of a hologram
7. Understand the fourier transforming properties of lenses
8. Understand the applications of non-linear optics.

ADVANCED SOLID STATE PHYSICS

On successful completion of course student will:

1. Acquire knowledge about different experimental approaches in the study of Fermi surfaces in different materials. .
2. Understand piezo, pyro and Ferro electricity, ferroelectric domains and hysteresis.
3. Understand basic theories of magnetic materials like ferromagnetism, ferrimagnetism, anti-ferromagnetism.
4. Acquire basic knowledge on (low temperature) superconductivity in type I and type II super conductors, and also different theoretical approaches to super conductivity (BCS).
5. Understanding of various phenomena related to super conductivity, such as the Meissner effect, flux quantization, Giæver- and Josephson tunneling.

ELECTRONIC INSTRUMENTATION

On successful completion of course student will:

1. Measure various electrical parameters with accuracy, precision, resolution.
2. Design different types of amplifiers and filters.
3. Select specific instrument for specific measurement function.
4. Understand principle of operation, working of different electronic instruments like digital multi meter, vector voltmeter, and power factor meter.

5. Analyze the functioning, specification, and applications of signal generators and signal analyzing instruments.
6. Understand working & principle of various signal analyzers like wave analyzer, distortion analyzer & spectrum analyzers
7. Test and troubleshoot electronic circuits using various electronic measuring instruments.

DIGITAL LOGIC CIRCUITS

On successful completion of course student will:

1. Acquire the basic knowledge of digital logic levels and its application.
2. Gain knowledge on digital arithmetic operations for algebraic simplification.
3. Understand digital IC terminology and characteristics of TTL, MOS,ECL families.
4. Design Decoders, Encoders, Digital multiplexers, Adders and Subtractors, Binary comparators, Latches and Flip-Flops
5. Design registers and Counters, A/D and D/A converters.
6. Understand, analyze and design of programmable logic devices and VHDL
7. Identify basic requirements for a designing a combinational logic circuit
8. Identify and prevent various hazards and timing problems in a digital circuit.

SEMESTER IV-NUCLEAR PHYSICS

On successful completion of course student will:

1. Understand Nuclear Force And Nuclear Models
2. Analyze the semi empirical mass formula and its applications using liquid drop model and shell model
3. Understand the concept of Nuclear Decay Processes
4. Interpret the Classification of nuclear reactions
5. Understand the Classification of elementary Particles and their Quantum Numbers

SPECTROSCOPY

On successful completion of course student will:

1. Understand the basic principles of atomic absorption spectroscopy.
2. Interpret the working principles and outline the atomic absorption spectroscopy device.
3. Understand Micro-wave, IR and RAMAN spectroscopy and interpret the data from these measurements.
4. Understand the basic principles of NMR and ESR spectroscopy and its applications

INTRUMENTATION FOR MEASUREMENT AND DATA TRANSMISSION

On successful completion of course student will:

1. Understand the Classification of transducers - Active and Passive transducers, Electrical transducers, Displacement transducers, Digital transducers.
2. Understand the operation of strain gauge, Types of strain gauges, Strain gauge circuits, Calibration of strains gauges. Strain gauge load cell.
3. Categorise the different kinds of Temperature, Pressure measurement devices and apply them in various electronic devices.
4. Analyze the different types of flow meters like Head type flow meters-Orifice meter, Venturi Tube, Pitot tube, Rotameter, Anemometer, Electromagnetic flow meter - Ultrasonic flow meter.
5. Understand open loop control & closed loop control systems
6. Gain the knowledge on working of dc and ac servomotors and use them in applications requiring precise position control.
7. Analyze the methods of data transmission.

EMBEDDED SYSTEMS

On successful completion of course student will:

- a. Analyze the models of embedded systems using different processor technologies and also various types of peripherals used in embedded system.
- b. Analyze a given embedded system design and identify its performance
- c. Understand the programming model and Instruction set of 8051 Microcontroller, Addressing mode supported by 8051 instruction set.
- d. Practice the assembly language programs.

- e. Gain knowledge on Serial data transfer, Interrupts, I/o ports and port expansion, DAC, ADC, Stepper motor,
- f. Interpret the interfacing of LCD, key board, A/D & D/A, and stepper motor 8051 Microcontroller.

COURSE OUTCOMES OF MATHEMATICS

SEMESTER- I-DIFFERENTIAL CALCULUS

On Completion of this course the students will be able to:

1. Explain the relationship between the derivative of a function as a function and the notion of the derivative as the slope of the tangent line to a function at a point.
2. Compare and contrast the ideas of continuity and differentiability.
3. To inculcate to solve algebraic equations and inequalities involving the sequence root and modulus function
4. To able to calculate limits in indeterminate forms by a repeated use of L'Hospital rule.
5. To know the chain rule and use it to find derivatives of composite functions.
6. To find maxima and minima, critical points and inflection points of functions and to determine the concavity of curves.
7. To able to evaluate integrals of rational functions by partial fractions.

SEMESTER-II-DIFFERENTIAL EQUATIONS

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

1. The main aim of the course is to introduce the students to the technique of solving various problems of engineering and science
2. Distinguish between linear, nonlinear, partial and ordinary differential equations.
3. Solve basic application problems described by second order linear differential equations with constant coefficients.
4. Find power series solutions about ordinary points and singular points.
5. Find the transforms of derivatives and integrals.
6. Obtain an approximate set of solution function values to a second order boundary value problem using a finite difference equation.

7. Solve a homogeneous linear system by the eigenvalue method.
8. Obtain an approximate set of solution function values to a second order boundary value problem using a finite difference equation.

SEMESTER-III-REAL ANALYSIS

After completing the course students are expected to be able to:

1. Describe the basic difference between the rational and real numbers.
2. Give the definition of concepts related to metric spaces such as continuity, compactness, convergent etc.
3. Give the essence of the proof of Bolzano-Weierstrass theorem, the contraction theorem as well as existence of convergent subsequence using equicontinuity.
4. Evaluate the limits of wide class of real sequences.
5. Determine whether or not real series are convergent by comparison with standard series or using the ratio test.
6. Understand and perform simple proofs.
7. Students will be able to demonstrate basic knowledge of key topics in classical real analysis.
8. The course provides the basic for further studies with in function analysis, topology & function Theory.

SEMESTER-IV-ABSTRACT ALGEBRA

After completing the course students are expected to be able to:

1. Learn about the fundamentals concept of Groups, Sub groups, normal
2. subgroups, isomorphism theorems, Cyclic and permutations groups
3. To classify numbers into number sets
4. To combine Polynomial by Addition or Subtraction
5. To Solve problems of simple inequalities
6. Interpret basic absolute value Expression
7. To simplify algebraic expression using the commutative, Associative and distributive Properties

SEMESTER-V- LINEAR ALGEBRA

After completing the course students are expected to be able to:

1. Define vector space and subspace
2. Understand the concept of base and dimension of the vectorspace
3. Understand algebraic and geometric representations of vectors
4. Describes coordinates of a vector relative to a given basis
5. Discuss spanning sets for vectors
6. Use characteristic polynomial to compute eigenvalues and eigen vectors

7. Explain the relationship between the row space and column space of a matrix
8. Recognize and use basic properties of subspaces and vector space

SOLID GEOMETRY

After completing the course students are expected to be able to:

1. To understand geometrical terminology for sphere, cones, conoid and cylinder.
2. Able to recognize line and rotational symmetries.
3. Use geometric results to determine unknown angles.
4. Get basic knowledge about circle, cone, sphere, conoid and cylinder.
5. Understand the concepts and advance topics related to two and three dimensional geometry.
6. Find the area of triangles, quadrilaterals and circles and shapes based on these.

SEMESTER: VI-NUMERICAL ANALYSIS

After completing the course students are expected to be able to:

1. The theoretical and practical aspects of the use of numerical analysis.
2. Proficient in implementing numerical methods for a variety of multidisciplinary applications.
3. To establish the limitations, advantages, and disadvantages of numerical analysis.
4. To derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and non linear equations, and the solution of differential equations.
5. To understand of common numerical analysis and how they are used to obtain approximate solution to otherwise intractable mathematical problems.
6. To understand appropriate numerical methods to solve probability based problems.

SEMESTER: VI-VECTOR CALCULUS

After completing the course students are expected to be able to:

1. Define vector equations for lines and planes
2. Compute limits or derivatives of functions of two and three variables

3. Analyze vector functions to find limits, derivatives and integrals
4. Determine gradient vector fields and find potential function
5. Apply fundamental theorem of line integrals, Green's and divergence theorem to evaluate integrals
6. Compute partial derivatives, derivatives of vector valued function and gradient functions
7. Calculate directional derivatives and gradient
8. Explain the concept of conservative vector field and describes applications to physics

PG COURSE OUTCOMES

SEMESTER- I ALGEBRA

After completion of this course, students will be able

1. To classify numbers into number sets.
2. To combine polynomial by addition or subtraction.
3. To solve problems of simple Inequalities
4. Interpret basic absolute value expression
5. To simplify algebraic expressions, using the commutative, associative and Distributive properties.

ANALYSIS

After completion of this course, students will be able to

1. Describe fundamental properties of the real numbers that lead to the formal development of real analysis.

2. Comprehend regions arguments developing the theory underpinning real analysis
3. Demonstrate an understanding of limits and how that are used in sequences, series and differentiation.
4. Construct rigorous mathematical proofs of basic results in real analysis.
5. Appreciate how abstract ideas and regions methods in mathematical analysis can be applied to important practical problems.

MATHEMATICAL METHODS

- 1. After studying this course, you should be able to**
2. Demonstrate familiarity with emerging mathematical techniques appropriate in banks and other financial institutions.
3. Demonstrate an ability to select and apply numerical methods appropriate for the solution of financial problems.
4. The principles of mathematical reasoning and their use in understanding analyzing and developing formal arguments.
5. The connections between the mathematical series and other scientific and humorous disciplines.
6. Undertake a piece of directed in mathematical finance.

ELEMENTARY NUMBER THEORY

On Successful completion of this course will enable you to:

1. Prove results involving divisibility and greatest common divisors;
2. Solve systems of linear congruences;
3. Find integral solutions to specified linear Diophantine Equations;
4. Apply Euler-Fermat's Theorem to prove relations involving prime numbers;
5. Apply the Wilson's theorem.

SEMESTER- II-ADVANCED ALGEBRA

On satisfying the requirements of this course, students will have the knowledge and skills to:

1. Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
2. Explain Demonstrate accurate and efficient use of advanced algebraic techniques.
3. Demonstrate capacity for mathematical reasoning through analyzing, Proving and explaining concepts from advanced algebra.
4. Apply problem-solving using advanced algebraic techniques applied to diverse situations in physics, engineering and other mathematical

SEMESTER- II-ADVANCED ANALYSIS

After completion of this course, students will be able to

1. Read analyze and write logical arguments to prove mathematical concepts
2. Communicate mathematical ideas with clarity and coherence both written and verbally
3. Fundamental objects ,techniques and theorems in the mathematical sciences including the fields of analysis
4. Master the object material in the four required core course that form the academic pillars of the program
5. Demonstrate a competence in formulating , analysing and solving problems in several core areas of mathematics at a detailed level , including analysis

SEMESTER- II-THEORY OF ORDINARY DIFFERENTIAL EQUATION

After completion of this course, students will be able to:

- The study of Differential focuses on the existence and uniqueness of solutions and also emphasizes the rigorous justification of methods for approximating solutions in pure and applied mathematics.
- It plays an important role in modelling virtually every physically technical or biological process from celestial motion to bridge design to interactions between neurons.
- Theory of differential equations is widely used in formulating many fundamental laws of physics and chemistry.
- Theory of differential equation is used in economics and biology to model the behaviour of complex systems.
- Differential equations have a remarkable ability to predicts the world around us. They can describe exponential growth and decay population growth of species or change in investment return over time.

SEMESTER- II TOPOLOGY

After completion of this course, students will be able to:

1. Topology uses to analyze complex networks Ex: Social networks, Biological networks, Internet etc.
2. It applies Differential Topology to probability to identity multivariate interactions. This was used in neuro science recently to deduce how neurons are interacting.
3. This paper discusses using cell phones to actually map out the topology of indoor spaces.
4. Another cool application is in the world of chemistry where one can discuss the shape of molecules by an analysis of the topology of a related graph.
5. There is also an application for medical imaging software and technology.

SEMESTER- III ANALYSIS

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

1. Justify the need for a Complex Number System and explain how is related to other existing number systems
2. Define a function of complex variable and carry out basic mathematical operations with complex numbers.
3. know the condition(s) for a complex variable function to be analytic and/or harmonic
4. State and prove the Cauchy Riemann Equation and use it to show that a function is analytic.
5. define singularities of a function, know the different types of singularities, and be able to determine the points of singularities of a function
6. Explain the concept of transformation in a complex space (linear and non-linear) and sketch associated diagrams.
7. Understand the concept of sequences and series with respect to the complex numbers system and establish whether a given series/ sequences is convergent/ divergent at a specified point or interval.

SEMESTER- III-ANALYSIS

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

1. Explain the fundamental concepts of functional analysis and their role in modern mathematics and applied contexts
2. Demonstrate accurate and efficient use of functional analysis techniques.
3. Demonstrate capacity for mathematical reasoning through analysing proving and explaining concepts from functional analysis.
4. Apply problem-solving using functional analysis technique applied to diverse situations in physics, engineering and other mathematical context.

SEMESTER- III-DISCRETE MATHEMATICS

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

1. Understand the basic principles of sets and operations in sets
2. Apply counting principles to determine probabilities
3. Demonstrate different traversal methods for trees and graphs
4. Write model problems in computer science using trees and graphs
5. Write an argument using logical notation and determine if the argument is or is not valid
6. Determine when a function is one- one and onto.
7. Prove basic set equalities.
8. Demonstrate the ability to write and evaluate a proof.

SEMESTER- III OPERATION RESEARCH

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

1. Operation Research is used for defence capability acquisition decision making.
2. It is used to find optimal or near optimal solutions to complex decision making problems.
3. It is used in finding maximum (of profit or yield) in real-world objective.
4. It is used in finding minimum (of loss or cost) in real-world objective.
5. It is used in data envelopment.
6. It has strong ties to computer science and analytics.

SEMESTER- IV ADVANCED COMPLEX ANALYSIS

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

1. Perform basic algebraic manipulation with complex numbers
2. Understand the geometric interpretation of complex numbers
3. Know methods of finding the n th roots of complex numbers and the solutions of simple polynomial equations.
4. Use analytical functions and conformal mappings;
5. Compute definite integrals using residue calculus;
6. Appreciate the existence of special functions and their use in a range of contexts.

SEMESTER- IV GENERAL MEASURE THEORY

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

1. Students will understand the fundamentals of measure theory and be acquainted with the proofs of the fundamental theorems underlying the theory of integration.
2. They will also have an understanding of how these underpin the use of mathematical concepts such as volume, area, and integration and
3. They will develop a perspective on the broader impact of measure theory in ergodic theory and have the ability to pursue further studies in this and related area.
4. The students will learn about measure theory random variables, independence, expectations and conditional expectations, product m
5. Measures and discrete parameter martingales.
6. Explain the concept of length, area, volume using Lebesgue's theory.
7. Apply the general principles of measure theory and integration in such concrete subjects as the theory of probability or financial mathematics.

SEMESTER- IV INTEGRAL CALCULUS AND CALCULUS OF VARIATION

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

2. Learn variation principles
3. Develop the knowledge in the path of the rocket trajectory, optimal economic growth
4. Gain the vast knowledge by using the applications of calculus of variations in biological and medical field.

Ex: Spread of a contagious disease, pest control cancer chemotherapy and immune system, etc.

5. Learn easier & systematic way to ordinary and differential equations and partial differential equations
6. Develop the skills while doing/solving the various problems by using integral equations in all engineering sciences and etc.

SEMESTER- IV ADVANCED OPERATION RESEARCH

After studying this course, you should be able to:

1. Give an appreciation of strategic importance of operations and supply chain management in a global business environment.
2. Understand how an operation relates to other business function.
3. Develop a working knowledge of concepts and methods related to designing and managing operations and supply chains.
4. Develop a skill set for quality and process improvement.
5. Develops how to manage and control the resource allocation.

STATISTICS COURSE OUTCOMES

SEMESTER-I DESCRIPTIVE STATISTICS AND PROBABILITY

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

1. Organize, manage and present data.
2. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.
3. Analyze statistical data using measures of central tendency, dispersion and location.
4. Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.
5. Translate real-world problems into probability models.
6. Derive the probability density function of transformation of random variables.
7. Calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables.
8. Analyze Statistical data using MS-Excel.

SEMESTER-II PROBABILITY DISTRIBUTIONS

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

1. Use discrete and continuous probability distributions, including requirements, mean and variance, and make decisions.
2. Define binomial outcomes and compute probability of getting X successes in N trials.
3. Identify the characteristics of different discrete and continuous distributions.
4. Identify the type of statistical situation to which different distributions can be applied.
5. Use Poisson, exponential distributions to solve statistical problems.
6. Use the normal probability distribution including standard normal curve calculations of appropriate areas.
7. Use different distributions to solve simple practical problems.
8. Analyze Statistical data using MS-Excel.

SEMESTER-III STATISTICAL METHODS

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

1. Calculate and interpret the correlation between two variables.
2. Calculate the simple linear regression equation for a set of data.
3. Employ the principles of linear regression and correlation, including least square method, predicting a particular value of dependent variable for a given value of independent variable and significance of the correlation coefficient.
4. Know the association between the attributes.
5. Know the construction of point and interval estimators.
6. Evaluate the properties of estimators.
7. Demonstrate understanding of the theory of maximum likelihood estimation.
8. Analyze Statistical data using MS-Excel.

SEMESTER –IV INFERENCE

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

1. Define null hypothesis, alternative hypothesis, level of significance, test statistic, p value, and statistical significance.
2. Identify the four steps of hypothesis testing.
3. Apply central limit theorem to describe inferences.
4. Perform parameter testing techniques, including single and two sample tests for means, standard deviations and proportions.
5. State and define the inference from small samples including differences between two population means, population variances.
6. Analyze data including Chi-square test for goodness of fit and independence of attributes.
7. Use in practice the parametric and non-parametric statistical methods.
8. Use MS-Excel to generate output for the most common inference procedures.

SEMESTER-V SAMPLING THEORY, TIME SERIES,INDEX NUMBERS AND DEMAND ANALYSIS

1. Upon successful completion of the course, students will be able to:
2. Know the practical issues arising in sampling studies.
3. Demonstrate understanding of the concepts of time series and its applications in different areas.
4. Determine and apply appropriate models to real time series data and interpret the outcomes of analysis.
5. Explain how supply and demand relationships between the price of a product and the quantity of the same product.
6. Determine the equilibrium price and quantity from a table of prices and the related quantity supplied and quantity demanded.
7. Analyze statistical data using MS-Excel.

SEMESTER-V STATISTICAL QUALITY CONTROL AND RELIABILITY

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

1. Understand the concepts of quality control, chance and assignable causes of variation, control charts for variables and attributes. producer's and consumer's risk –
2. Acceptance sampling plans.
3. Understand the setting of control limits and apply the concepts using the problem solving.
4. Demonstrate the ability to design, use, and interpret the control charts for variables and attributes.
5. Analyze statistical experiments leading to Reliability modeling.
6. Understand the link between SQC and industry.
7. Analyze statistical data using MS-Excel.

SEMESTER VI-DESIGN OF EXPERIMENTS, VITAL STATISTICS, OFFICIAL STATISTICS AND BUSINESS FORECASTING

1. Upon successful completion of the course, students will be able to:
2. Appropriately interpret results of analysis of variance tests.
3. Design experiments, carry them out, and analyze the data they yield.
4. Acquire knowledge on vital statistics, Index numbers and calculate an indices from given data.
5. Know the functions of various statistical organizations.
6. Demonstrate the knowledge of business forecasting.

Analyze statistical data using MS-Excel.

SEMESTER VI-OPERATIONS RESEARCH

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

1. Know the various techniques of operations research.
2. Translate a real – world problem, given in words, into a mathematical formulation.
3. Analyze the results and propose recommendations to the decision making processes.
4. Build and solve transportation models and assignment models.
5. Develop Linear programming models of the Assignment problem and Transportation problem.
6. Solve the mathematical model manually as well as using software TORA
7. Implement practical cases in operations research by using TORA software.
8. Analyze statistical data using MS-Excel.

COURSE OUTCOME OF COMPUTER SCIENCE

I- SEMESTER- PROGRAMMING IN C

- CO1. Apply C Language basic concepts in constructing simple programs
- CO2. Be able to write the program, edit , compile, debug, correct, Recompile and run in C
- CO3. To design an algorithm for the given problem
- CO4. To write a C program for a given algorithm
- CO5. Construct top down structured c program using functions
- CO6. Explain the pointers concept for dynamic memory management
And data structures implementation
- CO7. Explain file handling concept for input and output processing
- CO8. Ability to explain the run-time behavior of the program at machine level
- CO9. Ability to develop and execute C programs.

SEMESTER II- PROGRAMMING IN C++

- CO1. Apply C++ Language basic concepts in constructing simple programs
- CO2. Relate Object and class concept to real world entities.
- CO3. Explain and write programs for Object Oriented concepts such as encapsulation, inheritance and polymorphism
- CO4. Explain file handling concept for input and output processing
- CO5. Ability to write programs for exception handling in c++
- CO6. Explain the pointers concept for dynamic memory management
and
data structures implementation
- CO7. Develop and Execute c++ programs in the lab for every concept.
- CO8. Ability to design and implement programs for real time complex problems.

SEMESTER III- DATA STRUCTURES

- CO1. Ability to explain the basic operations on linear structures such as arrays, stacks, queues and linked lists
- CO2. Ability to explain the concept of non linear structures such as trees and graphs.
- CO3. Ability to explain and Evaluate search techniques
- CO4. Ability to explain sorting algorithms.
- CO5. Analyze the efficiency of various sorting algorithms
- CO6. Construct code for polynomial expression evaluation
- CO7. Develop and execute code for various sorting and search techniques.
- CO8. Be able to understand hierarchical representation of data using Trees and their application in solving a wide range of problems

SEMESTER IV- DATABASE MANAGEMENT SYSTEM

1. Differentiate database systems from file systems by enumerating the features provided by database systems
2. Able to understand various data models and differentiate changes happened from one to the other model.
3. Use an SQL interface of a multi-user relational DBMS package to create, secure, populate, maintain, and query a database.
4. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
5. Get more popularize with single user databases and distributed databases.
6. Be able to get familiar with what is a Business Intelligence and various methods of developing business models using OLAP, ROLAP and MOLAP.
7. Be familiar with the basic issues of transaction processing and concurrency control.
8. Get acquainted with data administration both at technical level and managerial level.

V-SEMESTER- PYTHON-1

- CO 1. Master an understanding of scripting and the contributions of scripting languages.
- CO 2. Master an understanding of Python especially the object oriented concepts, classes , subclasses, inheritance, and overriding.
- CO 3. Understand the basics of OO design.
- CO 4. Master an understanding of the built in objects of Python,
- CO 5 Be fluent in the use of procedural statements assignments, conditional statements, loops, function calls and sequences.
- CO 6. Be able to design, code, and test small Python programs that meet requirements expressed in English.

V-SEMESTER- PROGRAMMING IN JAVA

- CO 1. Write, compile, and execute Java programs that may include basic data types and control flow constructs using J2SE or other Integrated Development Environments (IDEs).
- CO 2. Knowledge of the structure and model of the Java programming language.
- CO 3. Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.
- CO 4. Understand the principles of inheritance, packages and interfaces.
- CO 5. Demonstrate the concepts of polymorphism and inheritance.
- CO 6. Write applet programs that can load images and play sound.

V- SEMESTER- SOFTWARE ENGINEERING

- CO 1. Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle
- CO 2. Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.
- CO 3. Ability to design different architectural styles, analyse them and thereby design models.
- CO 4. Model the structure and behaviour a software system the UML class diagrams and state diagrams.
- CO 5. Formulate a testing strategy for a software system, employing techniques such as system testing, software testing, object- oriented testing and black-box testing.
- CO 6. Development: Graduates can effectively apply software engineering practice over the entire system lifecycle. This includes requirements engineering, analysis, prototyping, design, implementation, testing, maintenance activities and management of risks involved in software and embedded systems.

VI-SEMESTER- PYTHON-2

- CO1.** To learn how to design and program simple Python applications using python concepts.
- CO2. To learn how to build programs using package Arrays and numpy for multidimensional arrays matrices concept in Python.
- CO3. To learn how to use indexing and slicing to access data in Python programs.
- CO4. To learn how to write functions and pass arguments in Python.
- CO5. To learn how to use Strings and Characters in Python.
- CO6. To learn how to use and build programs using lists, tuples and dictionaries in Python.

SEMESTER -VI - COMPUTER NETWORKING

- CO1. Explain OSI/ISO model and TCP/IP models.
- CO2: Understand and explain Data Communications System and its components.
- CO3: Explain the types of transmission media with real time applications
- CO4: Understand different types of networks in detail
- CO5: Identify the different types of network devices and their functions within a network

SEMESTER -VI - WEB PROGRAMMING

- CO1. Apply a structured approach to identify needs, interests, and functionality of a website
- CO2. Different ways to select and style HTML elements using CSS
- CO3. Different ways to select and style HTML elements using CSS
- CO4.

Students are able to develop a dynamic web page by the use of java script and DHTML

- CO5. HTML tags and how to use them to start building your web pages
- CO6. Students will be able to write a well formed/valid XML documents
- CO7. Create an active server application using personal web server
- CO8. Knowledge of various networking protocols

COURSE OUTCOMES OF CHEMISTRY

SEMESTER 1-PAPER – 1

S1-CO1

Describe the synthesis & list the various types of B, C, Si & N compounds.

S1-CO2

Interpret the diagonal relationship of s block elements & understand physical & chemical reaction of Aliphatic & Alicyclic hydrocarbon

S1-CO3

Based on bond polarization acidity & basicity & stability of reactive intermediate of different hydrocarbs can be determined

S1-CO4

By considering principles of solubility product & common ion effect cation can be discriminated by anions in a salt mixture

S1-CO5

Have an idea of critical & van der Waals constant. By taking the criteria of wave function particle in a 1D box can be explained

S1-CO6:

Predict the bond order & magnetic behavior for various molecules on the basis of MOED. In a given, mathematical data, accuracy, precision & error can be explained.

SEMESTER II-PAPER – II

S2-CO1

Acquire Knowledge about various preparation and chemical reactivity of aromatic compounds, halogen compounds and alkyl benzene.

S2-CO2

Able to understand the physical and chemical properties of oxides

Oxy- acids of p and d- block elements

S2-CO3

The study of colligative properties helps to determine molecular

masses of solutes, Nernst distribution law used to determine association

9. dissociation of solute in solvent, by using Bragg's equation various crystal structure can

be determined & by qualitative analysis one can determine the weight of chemical substances

S2-CO4

Band theory is useful to differentiate between conductors, insulators & semiconductors. Have an idea about material science

S2-CO5

By kinetic study one can judge the order of reaction of halogen compound & by taking criteria of optical activity one can express the stereochemistry of SN1 & SN2.

S2-CO6

Predicting the symmetry elements in various crystal lattices, the aromaticity of aromatic compounds can be predicted by Huckel's rule.

SEMESTER III-PAPER – III

S3 CO1

Defines the properties of f-block elements and non-aqueous solvents

S3CO2

Differentiate the symmetry elements, operations in molecules, lanthanides and actinides

S3CO3

Explore the methods of preparation and properties of alcohols, ethers and carbonyl compounds and current applications

S3CO4

Design the Phase equilibria of one component and two component system, compound with congruent and incongruent melting point.

S3 CO5

Demonstrate the methods of preparations and properties, of colloids, Analyze adsorption isotherms and its industrial applications to reduce pollution and compute the surface area of adsorbent

S3CO6

Know the synthetic techniques of Nano structured materials, its current applications.

S3 CO7

Classify stereoisomer's based on symmetry criteria and energy criteria.

S3CO8

Interpret R and S configuration, D/L Nomenclature and E/ Z Configuration.

S3 CO9

Predict the Conformations of simple organic molecules

SEMESTER IV-PAPER – IV

S4CO1

Describe the postulates and limitations of Werners theory ,Sidwick's and VBT theory.

S4CO2

.Acquire knowledge on the IUPAC Nomenclature and solve the EAN of coordination compounds.

S4CO3

Categorise the Organometallic compounds of Li Mg Al abd Metal carbonyls.Dicuss its applications.

S4CO4

Understand the preparation methods and its synthetic applications in industry of carboxylic acids and carbanions.

S4CO5

.Have an idea on all named reactions and mechanisms of carboxylic acids and nitrohydrocompoundsand focus on its industrial applications.

S4CO6

Acquire knowledge on Hittof's method ,Kholrausch law ,Arrhenius theory,Ostwald dilution law,DebyeHuckle Onsagar equation and predicts its applications.

S4CO7

Accomplish the Nernst equation, EMF of a cell ,Single electrode potential, Standard hydrogen electrode,electrochemical series.

SEMESTER VPAPER – V

S5CO1

Understand the theories of coordination compounds and stability of metal complexes.

S5CO2

List and judge the applications of coordination compounds in various fields

S5CO3

Know about the clusters with the examples of Borane and carborane

S5CO4

Compare the property and reactivity of different class of amines and design the synthesis pathway of different organic compounds using amines

S5CO5

Classify heterocyclic compounds and compare their aromatic character and reactivity

S5CO6

Develop concept on reaction kinetics with special reference to factors influencing the rate and evaluate the merits of different theories of reaction rate

S5CO7

Know about electromagnetic radiation and understand the interaction of electromagnetic radiation with molecules - various types of molecular spectra

S5CO8

Learn to analyze the consequences of light absorption with reference to various photo physical processes and photochemical reactions with normal and abnormal quantum yield.

SEMESTER V-PAPER – VI

S6CO1

Acquire the knowledge of principle and methods of solvent extractions and their application.

S6CO2

Understand the classification of Chromatographic methods, principle, nature of adsorbents and solvent systems.

S6CO3

Understand and evaluate Principle, Instrumentation and application of TLC, Paper chromatography, Column chromatography, IEC, GC, HPLC techniques.

S6CO4

Illustrate general features of absorption, its laws.

S6CO5

Acquire the Knowledge of Instrumentation of Spectrophotometry, its principle and with their application in estimation of Iron, Chromium and Manganese in Steel.

S6CO6

Know about the of types of electroanalytical methods.

S6CO7

Analyze the principles, types of electrodes used and applications of potentiometry, Voltametry and conductometry.

SEMESTER VI-PAPER – VII

S7CO1

Understand the concept of Inorganic reaction mechanism with respect to octahedral and tetrahedral complexes

S7CO2

Know about the Biological significance of essential elements and toxicity of heavy metals

S7CO3

Acquire knowledge about carbohydrate chemistry with reference to definition, classification and evaluation of structure from reactions.

S7CO4

Acquire knowledge about chemistry of amino acids – essential amino acids, Biological importance. Learn to relate the peptide bond formation for the synthesis of protein

S7CO5

Have an extensive knowledge on Thermodynamics with reference to different Thermodynamic functions, processes, work of expansion and laws of Thermodynamics

S7CO6

Understand the applications of Thermodynamics in basic sciences for deriving equations, in engineering science for calculating efficiency of machine and evaluation of spontaneity of process. Learn to derive the equation of spontaneity, Gibb's equation and Maxwell's relations

S7CO7

Understand the principle of Nuclear Magnetic Resonance, concept of chemical shift and splitting of signals – spin –spin coupling. Implement the concept in analyzing the NMR spectrum for identification of organic compounds

S7CO8

Understand the basic principle of mass spectrometry and learn to determine the mass spectral pattern of different organic compounds.

SEMESTER VI-PAPER – VIII

S8 CO1

Recalling Infective and hereditary diseases.

S8CO2

Know about the terminology in medicinal chemistry and Nomenclature of Drugs. S8CO3

Understand ADME of Drugs.

S8CO4

Acquire the knowledge of mechanism of action of drugs and factors effecting action of Enzyme and Receptors.

S8CO5

Evaluate the Synthesis and therapeutic activity of Drugs related to Chemotherapeutics, acting on metabolic disorders and acting on nervous system.

S8CO6

Analyzing the function of molecular messengers and health promoting drugs.

COURSE OUTCOMES OF MBA

SEMESTER- I MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR

At the end of the course the students are able to:

1. Understand various managerial skills, roles, functions and levels
2. Realise that individuals are different and the various factors that shape personality Understand the characteristics of perciever and percieved that influence perception Identify and overcome perceptual errors
3. Gain knowledge of traditional and contemporay structural designs
4. Understand how various elements help in shape organisational culture
5. Identifying various motivators through the knowledge of theories of motivation Identifying various leadership styles and their suitability to the situation.

ACCOUNTING FOR MANAGEMENT

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

1. Know the process of accounting from the primary entry to the final statement
2. Gain the knowledge on different accounting standards which were given by the different bodies
3. Differentiate the tax planning, tax avoidance and the tax evasion.
4. Understand the application of different analytical tools like ratio analysis, cash flow statement, funds flow statement, etc.,. On final statements for further judgment of the business financial performance.
5. Understand the importance of the Balance score card in today's business environment.
6. Know the application of managerial decision tools in different situations in the business like make or buy decision, key factor analysis, sales mix etc.

MARKETING MANAGEMENT

At the end of the course the students are able to:

1. Understand the impact of changing global, Political, Economic, Competitive, Environmental, Cultural and Social Systems on marketing strategy development.
2. Understand the dynamic of the global business environment from a competitive and economic perspective.
3. Knowledge of society, culture and skills.

4. Examine the role of consumers as purchasers and users of goods and services using various theories and models of consumer behaviour.
5. Develop comprehensive strategic and tactical plans for an organization.
6. Work independently and collaboratively in inter and multidisciplinary and diverse environments.
7. Use creative, critical and reflective thinking to address organisational opportunities and challenge.

BUSINESS LAW AND ETHICS

1. After the completion of this course the student will be able to:
2. To comprehensively understand and be conversant with the legal framework on Business Laws; and Awareness of legal framework and its orientation for efficient and effective discharge of duties as managers in a competitive environment ; and to ensure compliance of legal formalities with values and ethics in the process of Business administration, Governance and corporate social responsibility.
3. To be conversant with the requisites to be complied with in framing a valid contract and understanding the elements which are essential for framing an Agreement and elements which are essential for enforceability of an agreement to make an agreement a valid contract.
4. To be familiar with provisions with regard to performance of a contract and also to be conversant with circumstances which lead to Breach of contract and remedies in the event of breach of a contract.
5. To be familiar with basic legal framework on special contracts; and conversant with rights, duties and obligations of the parties concerned under each of the Special Contracts.
6. To comprehensively understand with basic legal formalities for incorporation of a company and different types companies that exist ; and to be conversant with the basics of Memorandum of Association and Articles of Association to know scope and limitations of the company.
7. To be familiar with Legal and Institutional framework and its implications with regards to Company administration, Constitution and powers of Board of Directors, Shareholders, Secretarial Practice with regards to company law.
8. To understand from practical perspective how awareness of Consumers rights for getting protection from defects of goods and deficiencies from services is brought out in the society and community; and the functioning of Redressal Mechanism for protecting the consumers from their rights with simple legal formalities.
9. To understand how Value system and ethics need to be internalised and institutionalized in Management and Business Administration for development and growth of Business entity and its implications on corporate social responsibility and sustainable development.

MANAGERIAL ECONOMICS

1. After completion of this course, students should be able to take optimal managerial decisions by applying economic reasoning and analytical tools in various functional areas such as marketing, finance and general management:
2. Students are expected to know the nature of managerial economics and how it would enable a decision maker to take optimal decisions.
3. Besides knowing basic concepts of managerial economics and how they are applied in different decisional situations.
4. Students are expected to know the different demand situations and critical variables determining the demand and how to estimate the demand and finally how elasticity of demand can be applied in taking the pricing decisions.
5. Students are expected to understand different cost concepts and behavior of the production in relation to inputs and its implications on costs.
6. Students should be able to know how production efficiency can be optimized.
7. Students should be able to understand how output and price decisions are taken by a firm in different market structure in order to maximize the profits beside different price tactics adopted by firm.
8. Students can also expose how to leverage game theory in taking strategic moves in oligopoly market structure.
9. The students are expected to gain the knowledge of macro economics such as national income and its determinants besides implications of inflation, trade cycle on the business prospects of the firm.

BUSINESS COMMUNICATION

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

1. It gives an understanding of the “Process of Communication in an organization” It will help them to identify the ‘Barriers of Communication’
2. It will help them to enhance their presentations skills
3. It will enable the students to augment their report writing skills
4. It will enable them to ‘Draft a Resume’
5. It gives an understanding of the “Framework for Managing Investor Relations, & ways and means of Managing Power”.

IT APPLICATIONS FOR MANAGEMENT

After completion of this course, students should be able to:

1. Identify various types of Information System for Business Understand Information Technology Infrastructure
2. Define databases & identify types of Databases Apply Information Systems in business
3. Learn about E-Commerce & its Applications Understand the Process of E-payments
4. Learn emerging trends in Computing
5. Understand the need for Computer Security & Security Mechanisms

SEMESTER- II-HUMAN RESOURCE MANAGEMENT

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

1. Demonstrate knowledge of employee benefit concepts, administrative considerations and regular governing employee benefit practices.
2. Understand and apply the policies and practices of the primary areas of HRM including staffing, training and compensation.
3. Synthesize information regarding the effectiveness of recruitment methods.
4. Understand the importance of HR's and their effective Management in Organizations.
5. Record governmental regulations affecting employees and employers. Understand cost benefit analysis of training.
6. Outline the nature and sources of conflict and explain the different strategies and approaches used in the resolution of conflict.
7. State the significance of employee benefits to both employers and employees. and
8. Analyze core issues, policies and surrounding employee relations and legal issues.

FINANCIAL MANAGEMENT

At the end of the course the students should be able to:

1. Understand the role of the financial manager in growth of the firm by considering the agency relationship.
2. Apply the time value of money for personal finance management
3. Gain the knowledge on application of different techniques of capital budgeting under riskless and risky conditions for the investment decisions.

4. Build the optimum capital structure to take the optimum financing decisions. Gain the knowledge on the different concepts of cost of capital.
5. Gain the knowledge on application of relevance and irrelevance theories to take dividend decision.
6. Understand the different methods of corporate restructuring and the principles of good governance.

BUSINESS PROCESS REENGINEERING

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

1. Understand the Concept of Reengineering & its relationship with functional areas of business
2. Know the 'Reengineering Framework' Identify the 'Business Process Flows' Illustrate Little's Law
3. Understand the Business Process Map & Simulation Model Determine the Key Performance Indicators for growth

INTERNATIONAL BUSINESS

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

1. Identify the stages in International Business.
2. Understanding cultural and political environment in the light of International trade theories.
3. What is the rationale for government intervention in the forms of trade regulation? Understanding major trading blocks: EU, NAFTA, ASEAN, SAARC.
4. To gain knowledge of structure and functions of TRIPS, TRIMS, WTO.
5. Differentiate the various global market entry strategies- Exporting, Licensing, Franchising etc.
6. Electronic processing of International trade documents.
7. International human resources management in global context.

FINANCIAL MARKETS AND SERVICES

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

1. Know about the financial market structure and participants in the markets.
2. Gain knowledge on the different financial services which are available in India.
3. Know the role of merchant bankers in providing the financial and non financial services.

4. Understand the Hire purchase and Lease assistance to micro small, small, medium and large scale business units.
5. Understand the importance of insurance for the business.
6. Understand the different financial services like factoring, credit rating methods.

START UP MANAGEMENT

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

1. Concept of Entrepreneur & Entrepreneurship
2. Recent trends of 'Women Entrepreneurship'
3. Need, Problems & Development of Rural Entrepreneurship Factors affecting Entrepreneurial growth
4. Entrepreneurial Development Programmes
5. Small Enterprises their Characteristics, Rationale, Objectives & Scope
6. Steps of Project Identification, Selection, Appraisal & Ownership Structures
7. Institutional Finance assistance available to Entrepreneurs for setting up an enterprise and Concept of Venture Capital and Various Evaluation Methods

RETAIL MANAGEMENT

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

1. The role and relevance of retail Management Types and trends of retailing
2. The difference between the organized and unorganized retail sector The role and importance of international retailing
3. Retail pricing strategies
4. Retail segmentation and relationship marketing About Merchandise management
5. CRM Process in retailing and legal compliances

STRATEGIC MANAGEMENT ACCOUNTING

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

1. Differentiate the behavior of fixed and variable costs.
2. Apply CVP analysis in product mix, make or buy, capacity utilization, plant shut down decisions.
3. Understand the role of budgetary control in the strategic planning and control.

4. Appreciate importance and relevance of performance budgeting, zero based budgeting.
5. Identify the different responsibility centres.
6. Understand behavioral aspects of various responsibility centres and performance evaluation of segments.
7. Differentiate traditional costing techniques with activity based costing techniques. To develop pricing and evaluation criteria for products at different stages of PLC.

SEMESTER- III- OPERATIONS MANAGEMENT

By the end of this course, Student will be able to

1. Understand the difference between production and operations management Understand the different process technologies
2. Gain knowledge of different types of sequencing
3. Identify similarities and differences between products and services and basic manufacturing process.
4. Understand the importance and role of maintenance management
5. Acquire the knowledge of work study and techniques of method analysis and work measurement
6. Understand the need and importance of materials management
7. Understand the importance of stores management and different techniques of inventory control.

E – BUSINESS

By the end of this course, Student will be able:

1. To provide an understanding of e-business applications in today's organizations
2. To understand various E business models Understand Online payment methods
3. To learn various E Marketing strategies.
4. Understand the legal and ethical issues related to protection of IPR in Online business
5. Understand the mobile commerce and its relevance for business. Understand M-commerce framework and Mobile business models Understand mobile communication systems and standards
6. Learn about various M banking technologies and Mobile payment systems

OPERATIONS RESEARCH

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

1. Apply Linear programming techniques to allocate scarce resources in an optimum manner in problems of scheduling, product mix etc.
2. Manage the Waiting line management to minimize the overall cost due to servicing and waiting.
3. Understand Network analysis to determine total project completion time, probability that a project will be completed by a certain date, least cost way of shortening total project completion time etc.
4. Apply Network analysis to plan, schedule, monitor and control large projects such as construction of a building, making a ship, or planning for a space flight.
5. Use Assignment problem to deal in allocating the various resources or items to various activities on a one to one basis in such a way that the time or cost involved is minimised.
6. Assign the jobs to the people in which the criterion involved is optimized.
7. Apply Transportation problem to deal with the transportation of a product from number of sources, with limited supplies to a number of destinations with specified demands.
8. Make Decisions under the conditions of risk and uncertainty.

FINANCIAL RISK MANAGEMENT

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

1. Identify the different sources of risk affecting the companies. To state the different risk management approaches.
2. Integrated approach to corporate risk management. The types of players in derivatives markets.
3. Understanding of Different types of products available in derivatives market. Valuation of futures & forward contract.
4. Design the swaps for a particular situation(Interest rate swaps / Currency swaps)
5. Application of Binomial valuation model and black and scholes option valuation models.
6. Measuring value at risk and cash at risk.

COMPENSATION MANAGEMENT

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

Gain knowledge of different components of compensation

Understand different monetary and non-monetary benefits of compensation Identify international components of compensation

Understand various factors required to design compensation Acquire the knowledge of different work schedules

Understand the different factors of expatriate and repatriate compensation elements Differentiate between legally required and discretionary benefits

Gain the knowledge about executive compensation system

ORGANISATION DEVELOPMENT

At the end of the course the students are able to:

1. Understand planned change through models of change
2. Understand various interventions and gain knowledge of planning, choosing and implementation of OD intervention
3. Know values beliefs and assumptions and OD values
4. Use certain team interventions
5. Gain knowledge of the conditions for optimal success of OD and the issues in Client consultant relationship
6. Understand the importance of participation and empowerment, functioning of teams and team work.

INTERNATIONAL FINANCE

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

1. Know the international financial system and framework
2. Understand the foreign exchange market transactions and role of the participants in the international market.
3. Gain the knowledge on exchange rate determination and the techniques of risk management.
4. Observe the MNCs' behavior in the global markets.
5. Understand the international tax environment.

INNOVATION MANAGEMENT

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

1. Classification of R&D and the Operations that make up R&D
2. Strategic Pressures on R&D; Technology Leverage and R&D Strategies Method of allocation of R&D Projects
3. Various Forms of External R&D
4. Way of Managing Scientific Freedom & its link with Product Innovation Process Process of Evaluating R&D Progress and Evaluation Criteria

5. Innovation as a Management Process

SEMESTER IV- STRATEGIC MANAGEMENT

At the end of the semester the student will be able to

1. Understand as to the Strategic Management Process and various tasks of Strategic Management and to comprehend the procedure for formulating and implementing strategies with case studies. Accordingly should be able to prepare a hypothetical case study based on assumptions.
2. Be familiar in formulating the Vision, Mission, Goals and Strategies for a Corporate entity with the help of a case study and also should be able to prepare Strategic Plan for a corporate Entity based on the assumptions of SWOT analysis etc.
3. Understand the conceptual framework on Core Competences , Competitive Advantage and Value Chain analysis ; and should be able to map Generic Strategies of a corporate entity on value chain template based on a case study and come out with suggestions for strategic options.
4. Be familiar with the conceptual framework on different levels of Levels of Strategies and should be able to apply the framework in respect f a case study.
5. Comprehensively understand the conceptual framework on Tailoring of strategies with reference to different industries and should be able to craft the strategies wth reference to different industries viz: Emerging Industries, Maturing Industries, Fragmented Industries, Turbulent and High Velocity market, Declining Industries etc.
6. Comprehensively focus on understanding of Strategy alternatives and apply the understanding to craft appropriate strategies for diversification, outsourcing etc., with a help of a hypothetical case study.
7. Understand the conceptual framework on Corporate Governance, Corporate Social Responsibility and Ethics; and should be familiar corporate culture conducive for good governance.
8. Understand the conceptual framework on Redesigning the Organisation structure and control, Strategic Leadership and ethical standards in the changing environment; and should be able to map the same for good governance with the help of a hypothetical case study.

BUSINESS INTELLIGENCE

At the end of the course students are able to:

1. Understand Business intelligence evolution and its benefits
2. Understand framework of Data Warehouse and various techniques of data mining
3. Analyse various business Performance Measures
4. Understand various tools and techniques of business analytics
5. Understand data visualization and its application
6. Understand the issues related to business intelligence implementation
7. Understand the emerging trends in Business intelligence implementation.

SUPPLY CHAIN MANAGEMENT

At the end of the course the students are able to:

1. Understand Framework of the Supply Chain Management, Value chain and Value delivery system of Supply chain Management
2. Gain knowledge on Integrated Logistics Management
3. Know the importance of transportation in Supply chain Management
4. Gain knowledge on Retail Supply Chain Management
5. Understand Role of IT in Supply Chain Management
6. Understand about supply chain Network Design and various Distribution channels of Supply chain Management

INVESTMENT MANAGEMENT(FINANCE)

At the end of the semester the student will be able :

1. To enable the students to understand the two main dimensions of the investment namely risk and return.
2. To measure the risk and return of various investment avenues.
3. To understand the yield, duration of Bonds.
4. To understand the various bond theorems and its implication on the price of the bond.
5. To understand the features of common stock.
6. To understand the significance and calculation of broader indices.
7. To be able to calculate intrinsic value of the stock through fundamental analysis.
8. To be able to evaluate the performance of the portfolio.

CONSUMER BEHAVIOUR (MARKETING)

1. To enable the students understand theories and models of consumer behaviour.
2. To make the students understand the consumers' perception, learning, attitude formation and product purchase preferences.
3. To make the students understand the impact of reference group on attitude formation, group conformity with product and service preference.
4. To make the students understand the role of culture, subculture, and religion on product and service preferences.
5. To enable the students understand the process of purchase and factors considered in each stage in the purchase process.
6. To enable the students understand the buying behaviour of institutional customers.

PERFORMANCE MANAGEMENT

At the end of the semester the student will be able to

1. Design a performance appraisal report through understanding of performance factors

2. Develop Key performance areas for specific role
3. Understand and set performance targets for a given performance
4. Gain and design Knowledge of performance process and cycle
5. Diagnose Review and analyse performance
6. Understand benchmarking process types and do benchmark for a particular process
7. Understand Impact of arousal on performance
8. List competencies and design pay models based performance competence and contribution
9. Understand various models of performance management

BANKING AND INSURANCE (FINANCE)

At the end of the course the students are able to:

1. Understand the overview of the structure of banking system in India.
2. Identify the various types of products and services available in Banking sector in India
3. Understand regulatory changes and innovations in the Banking and Insurance sectors.
4. Understand nature and importance of insurance in India
5. Understand the legal aspects of Insurance contract
6. Understand various forms of life and general insurance.

SERVICES AND GLOBAL MARKETING(MKT)

1. To make the students understand the difference between marketing of services and tangible goods.
2. To understand the nature and categorisation of services.
3. To make the students understand 7 Ps framework of marketing mix for marketing of services.

4. To the students distinguish between services expectations, customer satisfaction and service quality.
5. To make the students distinguish between internal, external and interactive marketing and the role of Customer Relationship Management for marketing of services.
6. To enable the students to develop marketing strategies in light of 7Ps framework.
7. To make the students understand Global marketing environment and Global marketing entry strategies.
8. To enable the students to make product decisions for Global markets including packaging, branding and product quality levels and
9. to enable the students to distinguish between domestic and Global marketing.

TALENT AND KNOWLEDGE MANAGEMENT

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

1. The importance of talent and Knowledge Management in Organisation
2. Understand the Meaning and importance of building and Managing talent reservoir
3. Understand the need and importance of developing competencies and role of leaders in the organisations
4. Understand various types of knowledge and their location
5. Understand various approaches to knowledge management
6. Identify how would this knowledge management effect the organisational functioning.