Camp Education Society's
Dr. Arvind B. Telang Senior College of Art's, Science and Commerce
Sector No. 27/A, Prabhakaran Nigdi Pune -411044

Affiliated to Savitribai Phule Pune University

[SPPU]

Choice Based Credit System [CBCS]

2019Pattern

Programme Outcomes, Programme Specific Outcomes, Course Outcomes (POs, PSOs, COs)

Camp Education Society's
Dr. Arvind B. Telang Senior College of Arts, Science and Commerce
Sector No. 27/A, Pradhikaran Nigdi Pune -411044

Programme Outcomes, Programme Specific Outcomes, Course Outcomes

CBCS pattern to be implemented from 2019-2020)

Department of Economics

Programme Outcomes

After successfully completion of three year degree program in Economics student should be able to;

PO-1. Present economic theory and applications in written and oral form.

PO-2. Demonstrate an understanding of microeconomic and macroeconomic theory.

PO-3. Apply economic theory to issues in fields of economics.

PO-4. carry out economic and policy analyses that draw on microeconomic theory, apply economic analysis to everyday problems in real world situations, to understand current events and evaluate specific policy proposals.

PO-5. Explain the function of market and prices as allocative mechanisms.PO-6. Apply the concept of equilibrium to both microeconomics and macroeconomics.PO-7. Identify key macroeconomic indicators and measures of economics change, growth, and development.

PO-8. Identify and discuss the key concepts underlying comparative advantage.PO-9. Identify and explain major types of market failures.

Programme Specific Outcomes

PSO-1. To able to understand basic concepts of economics.

PSO-2. To able to analyse economic behaviour in practice.

PSO-3. Understand the economic way of thinking.

PSO-4. The ability to analyse historical and current events from an economic perspective.

PSO-5. The ability to write clearly expressing an economic point of view.

PSO-6. Be exposed to alternative approaches to economic problems through exposure to coursework in allied fields.

PSO-7. To create students' ability to suggest of the various economic problems.

Course outcomes of Economics

F.Y.B.A Economics (Indian Economic Environment)

Choice Based Credit System (CBCS)

Objectives of the paper (Course Outcome)

1. To familiarize the students with the recent developments in the Indian Economy
2. To provide the students with the background of the Indian Economy with focus on contemporary issues like economic environment.
3. To help the students to prepare for varied competitive examinations
4. To enable students to understand and comprehend the current business scenario, agricultural scenario and other sectorial growth in the Indian context.
5. To make the student aware of the developments such as MSMEs, Digital Economy, E-Banking, BPO & KPO, etc.

Programme Outcome:-

1. Ability to develop an understanding of the economic environment and the factors affecting economic environment.
2. Ability to develop awareness on the various new developments in the different sectors of an economy – agriculture, industry, services, banking, etc.
3. Ability to compare and contrast Indian Economy with other world economies.
4. At the end of the course, the student should be able discuss and debate on the various issues and challenges facing the Indian Economic Environment.

S.Y.B.A Choice Based Credit System (CBCS)

G -2. Financial System

Objectives (Course Outcomes) of the Paper:

1. To understand fundamentals of modern financial system.
2. To understand the recent trends and developments in banking system.
3. To understand the role of the Reserve Bank of India in Indian financial system.
4. To provide the knowledge of various financial and non-financial institutions.
5. To provide the students the intricacies of Indian financial system for better financial decision making.

S.Y.B.A. Economics (Revised Syllabus)

S -1. Micro Economics

Objectives (Course Outcomes) of the Paper:

1. To develop an understanding about subject matter of Economics.
2. To impart knowledge of microeconomics.
3. To clarify micro economic concepts • To analyse and interpret charts, graphs and figures.
4. To develop an understanding of basic theories of micro economics and their application.
5. To demonstrate that the theories discussed in class will usually be applied to real-life situations.
6. To help the students to prepare for varied competitive examinations Method of Teaching: Classroom lectures, Use of ICT, YouTube lectures,

S.Y.B.A. Economics (Revised Syllabus)

S -2. Macro Economics Preamble –

Objectives (Course Outcomes) of the Paper:

1. To introduce students to the historical background of the emergence of macroeconomics.
2. To familiarize students with the differences between microeconomics and macroeconomics.
3. To familiarize students with various concepts of national income.
4. To familiarize students with Keynesian macroeconomic theoretical framework of consumption and investment functions.
5. To introduce students to the role of money in an economy.
6. To introduce students to the conceptual and theoretical frameworks of inflation, deflation and stagflation, Business Cycle.

T.Y.B.A Economics spl 3

International Economics 1 Sem- V

1. To relate and recall the concept of International Economics and International Trade
2. To describe and apply the theories of international trade
3. To explain and comprehend the issues relating to terms of trade and Balance of Payment-

International Economics Sem VI

1. Ability to relate and explain the concept of exchange Rate and foreign exchange Markets.
2. Ability to describe the trends in growth, composition and Direction of India foreign Trade.
3. Ability to comprehend the issue relating to foreign capital and Reginal and international co-operative.

Skill Enhancement Course Business Management

1. Management of Business.
2. Business planning and decision making

Leadership skills – Ability to work in teams at the same time, ability to show leadership quality.

T.Y.B.A Economics SPL VI

Public Finance

1. To explain and assess the components and instruments of Fiscal Policy.
2. To related to the concepts of budget and its components
3. To describe and analyze the concept of deficit financing and its effect.
4. To describe and explain the centre and state financial Relationship.
1. To related and recognize the nature and scope of public finance.
2. To describe and analyze the concept of Public Revenue and its components.
3. To explain types of public expenditure and reasons for rising public expenditure.
4. To explain the types of Public Debt and its effect.

T.Y.B.A Economics General Paper 3

Indian economic Development Sem-V

1- To relate and recognize the concept will have ability
2- To describe and analyze the concept and indicators of Human Development.
3- To explain the characteristics of Development and Developed countries
4- To describe the constraints to the process of economic Development.

Indian economic Development Sem-VI

1. To describe and explain the process of Economic Planning.
2. To describe and examine the changing structure of planning process in India.

To describe and explain the relation between Economic Development and Environment.

T.Y.B.COM Course code 353

Indian & Global Economic Development

1- Students will be able to understand present Economic Scenario of Indian Economy as well as World Economy
2. Students will be able to understand the various aspects of development in Agricultural, Industrial and service sector in India.
3. Students will be able to critically evaluate the role of India in international economy.

Students will be able to evaluate the working of international financial organization and institutions.

Department of Sociology

Course Outcomes of Sociology

F. Y. B. A. Sociology (G1) (w. e. f- 2019- 2020)
INTRODUCTION TO SOCIOLOGY Sem-I

Objectives

1)To understand the social context of emergence of Sociology.
2)To introduce basic sociological concepts and subject matter and perspectives of Sociology
3)To familiarize students with new avenues in Sociology

Sem-II

Social Institutions and Change

Objectives

1)To acquaint students with basic institutions of Society with its newer dimensions.
2)To develop critical understanding of the functioning of social institutions.
3)To acquaint students with the concept and current versions of social change.

S. Y. B. A. Sociology (General Paper-2) (w. e. f- 2020-2021)
Introduction to Population and Society Sem-III
Objectives

1)To introduce the significance of population studies and explain theories and basic concepts.
2)To understand the impact of population on various institutions of society.
3)To introduce students to various debates around sources of population data.

Population and Indian Society Sem-IV

Objectives

1)To understand the importance of population studies for policy and development.
2)To familiarise students to the dynamics of Indian Population.

S. Y. B. A. Sociology (Special Paper-I) (w. e. f- 2020- 2021)
Sem-III
Foundations of Sociological Thought
Objectives

1)To familiarize the students to the social background of emergence of sociological thoughts.
2)To introduce the students to the works of classical sociologists that shaped the discipline.

Sem-IV
Development of Sociology in India
Objectives

1)To expose the students to the processes that shaped the discipline of sociology in India.
2)To familiarise the students to major perspectives and works of some Indian sociologists.

S. Y. B. A. Sociology (Special Paper-II) (w. e. f- 2020- 2021))
Sem-III
Society in India: Understanding Issues
Objectives
1)To familiarize the students to various issues and problems of Indian society
2)To enable students to analyse social issues using different sociological perspectives.
3)To encourage students to think critically about the constructions of social issues

Sem-IV
Society in India: Core Issues
Objectives
1)To acquaint the students to the changing nature of social Issues in India
2)To encourage students to think critically about the constructions of social issues.

T. Y. B. A. Sociology (General Paper-III) (w. e. f- 2021-2022)
Sem-V
CCIII-: Crime and Society
Objectives
1.To acquaint the students with recent trends in criminology, changing profile of crime and criminals
2.To acquaint the students with different sociological approaches to crime.
3.To prepare the students for professional roles as correctional agents in agencies of criminal justice administration.

Sem-VI
CCIV-: Introduction to Human Rights and Social Justice
Objectives
1.To enhance the knowledge, understanding and awareness of students about human rights and social justice
2. To develop skills related to protection of human rights and ensuring of social justice
3. To promote respect for all through knowledge of human rights

T. Y. B. A. Sociology (Special Paper-III) (w. e. f- 2021-2022) Sem-V
DSE III -: Fundamental Principles of Social Research
Objectives
1.Tofamiliarize the students with different sociological approaches to research
2.To acquaint the students with different types of research and issues in research
3.To introduce the students to different procedures in conducting social research.

Sem-VI
DSE -: Techniques of Social Research
Objectives
1.To impart to students' basic research skills
2. To familiarize them about both the quantitative and qualitative research

T. Y. B. A. Sociology (Special Paper-IV) (w. e. f- 2021-2022)
Sem-V
DSE-: Contemporary Indian Society
Objectives

1.To acquaint the students to the forces that have shaped contemporary India. 2. To expose the students to the various issues of contemporary India.

Sem-VI
DSE -: Indian Society: Changes and Challenges
Objectives
1.To acquaint the students to the changes in contemporary Indian Society.
2.To familiarize the students to the various challenges of contemporary India.

T. Y. B. A. Sociology (Credit Course) (w. e. f- 2021-2022)
SEC III -:Academic Writing and Research Project
Objectives
1.To develop in students a sociological understanding of the concept of work, it's changing nature and impact on society
2.To introduce students to types of organizations in industrial and post-industrial society
3.To expose students to the impact of New Economic Policies on formal and informal sector.

T. Y. B. A. Sociology (Credit Course) (w. e. f- 2021-2022)
SEC IV -: Understanding and Mitigating Violence
Objectives
1.To expose students to the impact of New Economic Policies on nature of work in India
2.To make students aware of the problem in the informal sector In India

Department of Marathi

Program Outcome of Bachelor of Arts (B.A.)
Students seeking admission for B.A. programme are expected to imbue with following quality which help them in their future life to achieve the expected goals.
PO-1. Realization of human values.
PO-2. Sense of social service.
PO-3. Responsible and dutiful citizen.
PO-4. Critical temper.
PO-5. Creative ability.

Programmes Specific Outcomes B.A. (MARATHI)
PSO-1. Creating an interest in literature.
PSO-2. Availing the job opportunities in transformation and media.
PSO-3. Developing language.
PSO-4. Increasing the critical attitude about literary studies.
PSO-5. Imbuing the literary research attitude.

Course Outcomes
F.Y.B.A. SEM-I (Marathi)
CO-1. Understanding the interrelation between literature and society.

CO-2. Explaining the nature of Language and Literature.
CO-3. Obtaining the skills of literary criticism.
CO-4. Imbuing the essay writing skills.
CO-5. Illustrating the nature of literary forms like one-act-play, travelogue and short-story.

B.A. SEM-II (Marathi)
CO-1. Introduction of medieval Marathi language and literature.
CO-2. Introduction of the contemporary literary works.
CO-3. Acquiring the skill of translation.
CO-4. Explanation of the need and significance of editing.

B.A.III G3 (Marathi) Poetry
CO-1. Acquaintance with oriental poetry.
CO-2. Understanding the nature and features of poetry.
CO-3. Creating the skills of critical appreciation of poems.
CO-4. Developing the poetic devices and their uses.

B.A.III S4 Linguistics:
CO-1. Getting acquainted with modern linguistics.
CO-2. Understanding origin, nature and function of language.
CO-3. Getting information about phonetics.
CO-4. Enhancing the interest in Marathi Language.

B.A.III S3 Medieval Marathi Literature:
CO-1. Introduction of the historical survey of medieval Marathi literature.
CO-2. Introduction of the literary forms in medieval literature.
CO-3. Explanation of the trends and structure of medieval Marathi Literature.

Marathi III Utility and Creativity of Marathi Language:
CO-1. Understanding the formal and informal language.
CO-2. Developing various language skills.
CO-3. Getting motivation for creative writing.
CO-4. Understanding the technique of mass communication.

B.A.III Literary Criticism:
CO-1. Introduction to various trends in literary criticism.
CO-2. Understanding various trends in rural literature.
CO-3. Understanding various trends in Dalit literature.

T.Y.B.A. MARATHI

Sem V

G3 -- BHASHIK KAUSHALYVIKAS AANI ADHUNIK MARATHI SAHITYA PRAKAR: PRVASVARNAN

Course Objectives—
1. Acquiring writing skills for print media.
2. To understanding the nature, motivation, purpose, features and movement of the literary genre.

3. To understand taste and analyse the assigned travelogue.

Sem VI

G3—BHASHIK KAUSHALYVIKAS AANI MARATHI SAHITYA PRAKAR: KAVITA

1. To learn about Marathi literature, language skills development and governance.
2. To understanding the nature, movement, motivation, tendency and features of this genre of poetry.
3. Assessing, testing and analyzing selected poems from the designated textbook.
4. To get acquainted with the various inventions in the genre of poetry and the form of language on the basis of the poems of the textbook.

S3—MADHYYUGIN MARATHI VANGMAUACHA STHUL ITIHAS PRARAMBH TE 1600

Course Objectives –

1. To understand concept form, motivation, tendency of the growing history.
2. Understanding the social and cultural background of the medieval period.
3. To understand the chronological history of Marathi language and literature.
4.

S4—VARNNATMAK BHAHAVIDNYAN

Sem-V

Course Objectives—

1. Explain the nature, features and function of language.
2. Explain the need for language study.
3. Brief introduction to the branches and various methods of language study.
4. Understanding the structure of the senses and the process of self-creation.
5. To understand the science of self, self-thought and self-system of Marathi.

Sem VI

Course Objectives—

1 To understand morphology and morphology of Marathi.

2 By introducing syntax and syntax in the context of Marathi language introducing the concept of semantics through linguistic organs.

Department of Hindi

Program Outcome of Bachelor of Arts (B.A.)

Students seeking admission for B.A. programme are expected to imbue with following quality which help them in their future life to achieve the expected goals.

PO-1: Realization of human values.

PO-2: Sense of social service.

PO-3: Responsible and dutiful citizen.

PO-4: Critical temper.

PO-5: Creative ability.

Programmes Specific Outcomes B.A. (Hindi)

PSO-1: Creating an interest in literature.
PSO-2: Availing the job opportunities in transformation and media.
PSO-3: Developing language.
PSO-4: Increasing the critical attitude about literary studies.
PSO-5: Imbuing the literary research attitude.

Course Outcomes

F.Y.B.A. SEM-I (Hindi)

CO-1. Understanding the interrelation between literature and society.
CO-2. Explaining the nature of Language and Literature.
CO-3. Obtaining the skills of literary criticism.
CO-4. Imbuing the essay writing skills.
CO-5. Illustrating the nature of literary forms like one-act-play, travelogue and short-story.

B.A. SEM-II (Hindi)

CO-1. Introduction of medieval Hindi language and literature.
CO-2. Introduction of the contemporary literary works.
CO-3. Acquiring the skill of translation.
CO-4. Explanation of the need and significance of editing.

S.Y.B.A.(G2) SEM-III
(Hindi) Poetry

CO-1. Acquaintance with oriental poetry.
CO-2. Understanding the nature and features of poetry.
CO-3. Creating the skills of critical appreciation of poems.
CO-4. Developing the poetic devices and their uses.

SEM-III (S1) Linguistics:

CO-1. Getting acquainted with modern linguistics.
CO-2. Understanding origin, nature and function of language.
CO-3. Getting information about phonetics.
CO-4. Enhancing the interest in Hindi Language.

SEM-III (S2) Medieval Hindi Literature:

CO-1. Introduction of the historical survey of medieval Hindi literature.
CO-2. Introduction of the literary forms in medieval literature.
CO-3. Explanation of the trends and structure of medieval Hindi Literature.

III Utility and Creativity of Hindi Language:

CO-1. Understanding the formal and informal language.
CO-2. Developing various language skills.
CO-3. Getting motivation for creative writing.
CO-4. Understanding the technique of mass communication

TYBA HINDI (G3) Kathher Gadya Sahitya

Sem-V

1. To make students aware of memoir literature.
2. To make students aware of Resvachitra literature.

3. To develop students from the point of view of evaluation.
4. To develop the development of meeting chronicle writing skills.
5. Build dialogue-writing skills.

Sem-VI Ghazal literature

1. To make students aware of Ghazal literature.
2. To make the students aware of the personality of the Ghazalkar.
3. To develop the attitude of assessment to the students.
4. To make students aware of government letter writing.

S4 Sem-V Bhasha Vighyan

1. Introducing the nature of linguistics.
2. To explain the scope of Linguistics to the students.
3. Introducing the directions of linguistics.
4. To explain the application aspect of linguistics.
5. To explain the utility of linguistics in the study of literature.

Sem-VI Hindi Bhasha our Vikas

1. Introducing the nature of linguistics.
2. To explain the scope of Linguistics to the students.
3. Introducing the directions of study of linguistics.
4. Explaining the Application aspect of Linguistics.
5. To explain the utility of linguistics in the study of literature.

S3 Sem-V History of Hindi Literature

1. To acquaint the students with the background of modern times.
2. To make students aware of the poetry of Bharattendu era.
3. To get acquainted with the creators of the modern period.
4. To sensitize the students about the origin and development of Hindi poetry.

Sem-VI History of Hindi Literature

1. Introduction to Hindi Literature Writing.
2. To introduce the period division and nomenclature of Hindi literature.
3. To get acquainted with the compositions of the ancient, devotional, ritual, creators

MA-I Hindi Sem-I/Sem-II

Course out comes

1. To give information about the poetic lines of the carpet and the devotional period under Hindi literature.
2. To give information about the poetic lines of Bhakti period.
3. To develop critical vision in students through the study of ancient and medieval poetry
4. Introducing the elemental form of the main genres of mattresses, increasing the ability to understand and evaluate the importance of a particular composition in the context of the elemental nature of the genre and historical development.
5. To give information about the development sequence of major prose genres.
6. Importance of literary review to students introducing
7. Introducing the Indian literature to students
8. Introducing the poetic power and limitations of Kabir to students
9. Introducing the personality and work of Kabir to the students in the context of the then circumstances, giving information about his delivery to Hindi

MA-II Hindi Sahithya Sem-III/IV
Course out comes

1 To make students aware of modern poetry
2 Develop poetic radiance vision
3 Introduce the nature of linguistics
4 Introduce communication media and communication concepts
5 Develop communication skills
6 Introducing the major literary trends of the ancient devotional rituals, creators and compositions
7 Introducing the multifaceted role of the media
8 Explaining the scope of linguistics to the students

Department of English

Program Outcome of Bachelor of Arts (B. A.)
Students seeking admission for B.A. programme are expected to imbue with following quality which help them in their future life to achieve the expected goals.
PO- 1. Realization of human values
2. Sense of social service
3. Responsible and dutiful citizen
4. Critical temper
5. Creativity ability

Programmes Specific Outcomes B.A. (ENGLISH)
A student who has taken admission into this program of B.A. with English as specific subject of study, is expected to target on following outcomes.

PSO-1. Basic knowledge of English as language
PSO-2. Major knowledge of English as Literature
PSO-3. Basic knowledge of English Grammar
PSO-4. Critical study of English Literary studies
PSO-5. Relation between pleasure of literature and real life

F.Y.B.A. Compulsory English (w. e. f – 2019-2020)
(Choice Based Credit System)
Prescribed Text : Literary Gleam: An Anthology of Prose and Poetry (Board of Editors- Orient BlackSwan)
Objectives:
CO-1. To expose students to the best examples of prose and poetry in English so that they realize the beauty and communicative power of English
CO-2. To install human values and develop the character of students as responsible citizens of the world
CO-3. To develop the ability to appreciate ideas and think critically
CO-4. To enhance employability of the students by developing their linguistic competence and communicative skills
CO-5. To revise and reinforce structures already learnt in the previous stage of learning.

F.Y.B.A. – Optional English (General Paper -1) (w. e. f. 2019-2020)
Prescribed Text : Initiations: Minor Literary Forms & Basics of Phonology (Board of Editors- Orient BlackSwan)
Objectives:

CO-1. To expose students to the basics of literature and language and develop an integrated view about language and literature in them
CO-2. To acquaint them with minor forms of literature in English and help them to appreciate the creative use of language in literature
CO-3. To introduce them to the basics of phonology of English so that they can pronounce better and speak English correctly
CO-4. To prepare students to go for detailed study and understanding of literature and language
CO-5. To enhance the job potential of students by improving their language skills

F.Y.B.Com. Compulsory English (w. e. f – 2019-2020)
(Choice Based Credit System)
Prescribed Text: Success Avenue (Board of Editors- Orient BlackSwan)
Objectives:

CO-1. To offer relevant and practically helpful pieces of prose and poetry to students so that they are not get to know the beauty and communicative power of English but also its practical application
CO-2. To expose students to a variety of topics that dominate the contemporary socio-economic and cultural life
CO-3. To develop oral and written communication skills of the students so that their employability enhances
CO-4. To develop overall linguistic competence and communicative skills of students

F.Y.B.Com. Additional English (w. e. f – 2019-2020)
(Choice Based Credit System)
Prescribed Text: Pearls of Wisdom (Board of Editors- Orient BlackSwan)
Objectives:

CO-1. To expose students to a good blend of old and new literary extracts having various themes that are entertaining, enlightening and informative so that they realize the beauty and communicative power of English
CO-2. To make students aware of the cultural values and the major problems in the world today
CO-3. To develop literary sensibilities and communicative abilities among students

S.Y.B.A. Compulsory English (w. e. f – 2020-2021) (Core Course-CC)
Prescribed Text: Panorama: Values and Skills through Literature (Board of Editors BlackSwan)
Objectives:

CO-1. To expose students to the best examples of literature in English and to contribute to their emotional quotient as well as independent thinking
CO-2. To install universal human values through best pieces of literature in English
CO-3. To develop effective communication skills by developing ability to use right words in the right context
CO-4. To enhance employability of the students by developing their basic soft skills
CO-5. To revise and reinforce the learning of some important areas of grammar for better linguistic competence.

S.Y.B.A. Skill Enhancement Course (SEC-1 A) (Old General English-G-2) (w. e. f. 2020-2021)
Title of the Paper: Advanced Study of English Language
Prescribed Text: Linguistics : An Introduction-(Ed. Board of Editors, Orient Black Swan)
Objectives:
CO-1. To familiarize students with the various components of language
CO-2. To develop overall linguistic competence of the students
CO-3. To introduce students to some advanced areas of language study
CO-4. To prepare students to go for detailed study and understanding of language
CO-5. To enhance communicative skills of students by developing insight into the working of Language

S.Y.B.A. Discipline Specific Course (DSC-1 A) (Old Special Paper-I) (w. e. f. 2020-2021)
Title of the Paper: Appreciating Drama
Objectives:
CO-1. To introduce Drama as a major form of literature.
CO-2. To introduce minor forms of Drama.
CO-3. To acquaint and enlighten students regarding the literary and the performing dimensions of drama.
CO-4. To acquaint and familiarize the students with the elements and types of Drama
CO-5. To encourage students to make detailed study of a few sample masterpieces of English Drama from different parts of the world
CO-6. To develop interest among the students to appreciate and analyse drama independently.
CO-7. To enhance student's awareness regarding aesthetics of Drama and to empower them to evaluate drama independently

S.Y.B.A. Discipline Specific Course (DSC-2 A) (Old Special Paper- II) (w. e. f. 2020-2021)
Title of the Paper: Appreciating Poetry
Prescribed Text: Mirage : An Anthology of English Poetry Ed. Board of Editors, Orient BlackSwan
Objectives:
CO-1. To acquaint students with the terminology in poetry criticism (i.e. the terms uses in appreciation and critical analysis of poems)
CO-2. To encourage students to make a detailed study of a few sample masterpieces of English poetry
CO-3. To enhance students awareness in the aesthetics of poetry and to empower them to read, appreciate and critically evaluate poetry independently

S.Y.B.A. Skill Enhancement Course (SEC- 2 A) (w. e. f. 2020-2021)
Title of the Paper: Mastering Communication Skills
Objectives:
CO-1. Enhancing the skill of using English for everyday communication
CO-2. To acquaint the students with the verbal and nonverbal communication
CO-3. To create opportunities to access exposure of speaking in various contexts
CO-4. To acquaint and familiarize the students with soft skills
CO-5. To develop interest among the students to interact in English .

T.Y.B.A. Compulsory English (w. e. f – 2021-2022)
(CC-Core Course)

Objectives:

CO-1. To familiarize students with some excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English.
CO-2. To enable students to become competent and effective users of English in real life Situations.
CO-3. To contribute to the overall personality development of the students
CO-4. To install humanitarian values and foster sympathetic attitude in the students
CO-5. To train the students in practical writing skills required in work environment.
CO-6. To impart knowledge of some essential soft skills to enhance their employability

T.Y.B.A. Skill Enhancement Course (SEC 1-C & SEC 1-D) (Old G-3) (w. e. f. 2021-2022)
Title of the Paper: Enhancing Employability Skills

Objectives:

CO-1. To make students aware of career opportunities
CO-2. To identify the career opportunities suitable to them
CO-3. To understand the use of English in different careers
CO-4. To develop competence in using English for the career of their choice
CO-5. To enhance skills required for their placement.
CO-6. To use English effectively in the career of their choice
CO-7. To exercise verbal as well as nonverbal communication effectively for their career.

T.Y.B.A. Discipline Specific Elective (DSE-1C & DSE-1D) (Old S-3) (w. e. f. 2021-2022)
Title of the Paper: Appreciating Novel

Objectives:

CO-1. To introduce students to the basics of novel as a literary form
CO-2. To expose students to the historical development and nature of novel
CO-3. To make students aware of different types and aspects of novel
CO-4. To develop literary sensibility and sense of cultural diversity in students
CO-5. To expose students to some of the best examples of novel

T.Y.B.A. Discipline Specific Elective (DSE-2C & DSE-2D) (Old S-4) (w. e. f. 2021-2022)
Title of the Paper: Introduction to Literary Criticism

Objectives:

CO-1. To introduce students to the basics of literary criticism
CO-2. To make them aware of the nature and historical development of criticism
CO-3. To make them familiar with the significant critical approaches and terms
CO-4. To encourage students to interpret literary works in the light of the critical approaches
Co-5. To develop aptitude for critical analysis

T.Y.B.A. Skill Enhancement Course (SEC 2-C & SEC 2-D) (w. e. f. 2021-2022)
Title of the Paper: Mastering Life Skills and Life Values

Objectives:

CO-1. To equip the students with the social skills
CO-2. To train the students interpersonal skills
CO-3. To build self-confidence and communicate effectively
CO-4. To encourage the students to think critically

CO-5. To learn stress management and positive thinking
CO-6. To enhance leadership qualities
CO-7. To aware the students about universal human values
CO-8. To develop overall personality of the students

Department of History

Programme Outcomes:

- After graduation with B.Ed. course, student can chose teaching career .
- Graduates can select Museum curator, Historians, Tourism, History Expert etc. as their career options.
- Eligible to appear for any competitive exams conducted by UPSC, MPSC, Indian Railway Board, etc for entering into the government services.

Programme Specific Programme:

- The students obtain thorough knowledge of facts and figures of the past and make the learner take in the essence of that through multidisciplinary approach.
- It inculcates the learners into the intellectual forum through the study of history.
- It builds a sense of nationalism to enable the student community to face the onslaught of communalism and casteism.

Course Outcomes:
F.Y. B.A.: Early India: From Prehistory to the Age of the Mauryas&
Early India: Post Mauryan Age to the Rashtrakutas (2019 pattern)

- Emphasizes on the factors and forces behind the rise, growth and spread of civilization and culture of India along with the dynastic history.
- To help the students to understand the contribution of Early Indians to polity, philosophy, literature, art, religion and science and technology.
- Students can acquire the knowledge of developments in different parts of India through a brief study of regional kingdoms up to the tenth century C.E.
- Students will come to know consequences of the foreign invasions, particularly on the polity, society, economy and art and architecture.
- It provides a base for understanding the entire Indian history.
- Helps the student to understand the history of early India from the prehistoric times to the age of the Mauryas.

History for S.Y.B.A. (Credit System)
The academic Year 2020-21 Under the Faculty of Humanities Core Course-I (CC- 1C)- 3 Credit
Semester -III-**History of the Marathas: (1630-1707)**&
Semester -IV-**History of the Marathas: (1707-1818)**
Course Outcome:

- Student will develop the ability to analyse sources for Maratha History.
- Student will learn significance of regional history and political foundation of the region.
- It will enhance their perception of 17th century Maharashtra and India in context of Maratha history.
- Appreciate the skills of leadership and the administrative system of the Marathas.
- To introduce the students to the regional history of medieval Maharashtra and India.
- To study political, social and conceptual history of the Marathas in an analytical way with the help of primary sources.

- ✶ To evaluate contribution of Chhatrapati Shivaji Maharaj to the establishment of Swarajya, contribution of successors and later development of the Maratha kingdom.
- ✶ To study administrative Institutions of the Maratha.

Pedagogy: Lectures/Visual presentation/ Role play/ Critical analysis/ Assignments/ Tests/ Quiz/ e-learning

T.Y.B.A. (Credit System)

The academic Year 2020-21 Under the Faculty of Humanities Core Course-III (CC- 1C)- 3 Credit

Semester V: Course Title: - Indian National Movement (1885-1947)

Course Outcome:

1. It will enable students to develop an overall understanding of Modern India.
2. It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students.
3. Students will understand various aspects of the Indian Independence Movement and the creation of Modern India.

Pedagogy: Lectures / Visual Presentation / Critical Analysis / Assignments / Test/ e-learning

History for T.Y.B.A. (Credit System)

Core Course 4 (3 Credit)

Semester VI: Course Title: - India After Independence-(1947-1991)

Course Outcomes:

1. It will enable students to develop an overall understanding of the Contemporary India.
2. To increase the spirit of healthy Nationalism, Democratic Values and Secularism among the students.
3. Students will understand various aspects of India's domestic and foreign policies that shaped Post-Independence India.

Pedagogy: Lectures / Visual Presentation / Critical Analysis / Assignments / Test/ e-learning

Department of Geography

Course Outcomes of Geography:

F.Y. B.A (Sem-I & Sem-II) (2019-CBCS Pattern)

After successful completion of courses, students are able to

1. To introduce the students to the basic concepts in Physical Geography.
2. To acquaint the students with the utility and applications of Geomorphology in different areas and environment.
3. To make the students aware of the need of protection and conservation of different landforms.

Introduction: Pattern – CBCS: Semester

S.Y. B.A (Sem-I & Sem-II) (2019-CBCS Pattern)

After successful completion of courses, students are able to

1. To create the awareness about dynamic environment among the student.
2. To acquaint the students with fundamental concepts of environment geography for development in different areas.

3. The students should be able to integrate various factors of Environment and dynamic aspect of Environmental geography.
4. To make aware the students about the problems of environment, their utilization and conservation in the view of sustainable development

T.Y. B.A – (Sem-III &Sem-IV) (2019-CBCS Pattern)

1. To create the awareness about dynamic environment among the student.
2. To acquaint the students with fundamental concepts of environment geography for development in different areas.
3. The students should be able to integrate various factors of Environment and dynamic aspect of Environmental geography.
4. To make aware the students about the problems of environment, their utilization and conservation in the view of sustainable development

Department of Political Science

F. Y. B. A. Political Science G-1 General Paper
(CBCS pattern to be implemented from 2019-2020)

INTRODUCTION TO INDIAN CONSTITUTION

Course Objectives:

The contents of this course are designed with the following Objectives:

1. To acquaint students with the important features of the Constitution of India and with the basic framework of Indian government.
2. To familiarize students with the working of the Constitution of India.
3. This paper focuses in detail on the political processes and the actual functioning of the political system. It simultaneously studies in detail the political structure both.

Course Outcome in Political Science:

1 Student would have been familiarized with the political processes and the actual functioning of the political system.
2 Student would have been familiarized with studies in detail the political structure both Constitutional and Administrative.
3 Student would be emphasizing on local influences that derive from social stratification & impact on the political processes.

S. Y. B. A. Political Science
(CBCS pattern to be implemented from 2020-2021)

AN INTRODUCTION TO POLITICAL IDEOLOGIES

Objectives:

This course is designed to acquaint students with the

1. Role of different political ideologies and their impact in politics
2. Close link between an idea and its actual realization in public policy
3. Legacy of all the major ideologies.

Course Outcome in Political Science:

1 Student would be able to understand different political ideologies and their impact in politics.
2 Student would have been familiarized with evolution and development, thedifferent streams and subtle nuances within each ideology
3 Student would have been familiarized with the philosophical basis of the ideologies isemphasized with special emphasis on key thinkers and their theoretical formulations.

T.Y.B.A. Political Science

(CBCS pattern to be implemented from 2021-2022)

MODERN POLITICAL ANALYSIS

Objectives:

This course will introduce the overall scope of the sub-discipline of Modern Political Analysis. The focus of the course will be on the Modern Political Analysis of power. The emphasis is on the nature of power in modern societies- more in the form of organizations and social formations than as individual power. Students are also expected to understand different forms of justifications of power and the role of ideology in this regard. State will be studied as a repository of power in society while class and patriarchy are two instance of how the nature of power is shaped by social factors.

Course Outcome in Political Science:

1 Student would be able to understand different political analysis and their impact in politics.
2 Student would have been familiarized with evolution and development, the different streams and subtle nuances within each ideology
3 Student would have been familiarized with the philosophical basis of the ideologies is emphasized with special emphasis on key thinkers and their theoretical formulations.

Department of Chemistry

Programme Outcomes, Programme Specific Outcomes, Course Outcomes

Choice Based Credit System [CBCS] 2019 Pattern

First Year Bachelors of Science

(F. Y. B. Sc.) From Academic Year 2019-20

Programme Outcomes

After completion of First Year Students should be able to

1. To understand basic concept of physical, organic and Inorganic chemistry.
2. To impart practical skills and learn basics behind experiments.
3. To prepare background for advanced and applied studies in chemistry.

FY BSc SEMESTER-I

CH- 101: Physical Chemistry

After completing the course work learner will be acquired with knowledge of chemical energetics, Chemical equilibrium and ionic equilibria.

After completion of this course students should be able to

1. Students will be able to apply thermodynamic principles to physical and chemical process
2. Calculations of enthalpy, Bond energy, Bond dissociation energy , resonance energy
3. Variation of enthalpy with temperature –Kirchoff's equation
4. Third law of thermodynamic and its applications'
5. Chemical Equilibrium Knowledge of Chemical equilibrium will make students to understand
6. Relation between Free energy and equilibrium and factors affecting on equilibrium constant.
7. Exergonic and endergonic reaction
8. Gas equilibrium, equilibrium constant and molecular interpretation of equilibrium constant
9. Van't Haff equation and its application.
10. Ionic equilibria will lead students to understand a). Concept to ionization process occurred in acids, bases and pH scale b). Related concepts such as Common ion effect hydrolysis constant, ionic product, solubility product c). Degree of hydrolysis and pH for different salts, buffer solutions.

CH- 102: Organic Chemistry

After completion of this course students should be able to

1. The students are expected to understand the fundamentals, principles, and recent developments in the subject area.
2. It is expected to inspire and boost interest of the students towards chemistry as the main subject.
3. To familiarize with current and recent developments in Chemistry.
4. To create foundation for research and development in Chemistry.

CH- 103: Chemistry Practical Course I

After completion of this course students should be able to

1. Knows the Importance of chemical safety and Lab safety while performing experiments in laboratory.
2. Determination of thermochemical parameters and related concepts.
3. Techniques of pH measurements.
4. Preparation of buffer solutions.
5. Elemental analysis of organic compounds (non instrumental).
6. Chromatographic Techniques for separation of constituents of mixtures

FYBSC SEMESTER-II

CH-201: Inorganic Chemistry

After completion of this course students should be able to

1. Various theories and principles applied to revel atomic structure.
2. Origin of quantum mechanics and its need to understand structure of hydrogen atom.
3. Schrodinger equation for hydrogen atom.
4. Radial and angular part of hydrogenic wave functions.
5. Significance of quantum numbers.
6. Shapes of orbitals.
7. Explain rules for filling electrons in various orbitals- Aufbau's principle, Pauli exclusion principle, Hund's rule of maximum multiplicity.
8. Discuss electronic configuration of an atom and anomalous electronic configurations.

9. Describe stability of half-filled and completely filled orbitals.
10. Discuss concept of exchange energy and relative energies of atomic orbitals.
11. Design Skeleton of long form of periodic table.
12. Describe Block, group, modern periodic law and periodicity.
13. Classification of elements as main group, transition and inner transition elements.
14. Write name, symbol, electronic configuration, trends and properties.
15. Explain periodicity in the following properties in details: a. Effective nuclear charge, shielding or screening effect; some numerical problems. b. Atomic and ionic size. c. Crystal and covalent radii d. Ionization energies e. Electronegativity- definition, trend, Pauling electronegativity scale. f. Oxidation state of elements
16. Attainment of stable electronic configurations.
17. Define various types of chemical bonds- Ionic, covalent, coordinate and metallic bond'
18. Explain characteristics of ionic bond, types of ions, energy consideration in ionic bonding, lattice and solvation energy and their importance in the context of stability and solubility of ionic compounds.
19. Summarize Born-Lande equation and Born-Haber cycle.
20. Define Fajan's rule, bond moment, dipole moment and percent ionic character.
21. Describe VB approach, Hybridization with example of linear, trigonal, square planer, tetrahedral, TBP, and octahedral.
22. Discuss assumption and need of VSEPR theory.
23. Interpret concept of different types of valence shell electron pairs and their contribution in bonding.
24. Application of non-bonded lone pairs in shape of molecule .
25. Basic understanding of geometry and effect of lone pairs with examples such as ClF3, Cl2O, BrF5, XeO3 and XeOF4.

CH- 202: Analytical Chemistry

Students will know about basics of analytical chemistry, some techniques of analysis and able to do calculations essential for analysis.

After completion of this course students should be able to

1. Introduction to Analytical Chemistry i. Analytical Chemistry –branch of chemistry ii. Perspectives of analytical Chemistry iii. analytical problems

2. Calculations used in Analytical Chemistry i. Calculations of mole, molar concentrations and various units of concentrations which will be helpful for preparation of solution ii. Relation between molecular formula and empirical formula iii. Stoichiometric calculation iv. Define term mole, millimole, molar concentration, molar equilibrium concentration and Percent Concentration. v. SI units, distinction between mass and weight vi. Units such as parts per million, parts per billion, parts per thousand, solution-dilatant volume ratio, function density and specific gravity of solutions.

3 Qualitative Analysis of Organic Compounds Basics of type determination, characteristic tests and classifications, reactions of different functional groups. i. Separation of binary mixtures and analysis ii. Elemental analysis -Detection of nitrogen, sulfur, halogen and phosphorous by Lassiagen's test. iii. Purification techniques for organic compounds.

4. Chromatographic Techniques – Paper and Thin layer Chromatography i. Basics of chromatography and types of chromatography ii. Theoretical background for Paper and Thin Layer Chromatography

5. pH metry i. pH meter and electrodes for pH measurement ii. Measurement of pH iii. Working of pH meter iv. Applications of pH meter.

CH- 203: Chemistry Practical –II

After completion of this course students should be able to

1. Inorganic Estimations using volumetric analysis
2. Synthesis of Inorganic compounds
3. Analysis of commercial products
4. Purification of organic compounds
5. Preparations and mechanism of reactions involved

Choice Based Credit System [CBCS] 2019 Pattern
Second Year Bachelors of Science
(S. Y. B. Sc.) From Academic Year 2020-21

S.Y. B.Sc. Chemistry

Programme Outcomes

After completion of Second Year Students should be able to

1. To understand basic concept/principles of Physical, Analytical, Organic and Inorganic chemistry.
2. To impart practical skills and learn basics behind experiments.
3. To prepare background for advanced and applied studies in chemistry.

Course Outcomes S.Y. B.Sc. Chemistry Sem III

CH-301Physical and Analytical Chemistry

After completion of this course students should be able to

1. Define / Explain concept of kinetics, terms used, rate laws, molecularity, order.
2. Explain factors affecting rate of reaction.
3. Explain / discuss / derive integrated rate laws, characteristics, expression for half-life and examples of zero order, first order, and second order reactions.
4. Determination of order of reaction by integrated rate equation method, graphical method, half-life method and differential method.
5. Explain / discuss the term energy of activation with the help of energy diagram.
6. Explanation for temperature coefficient and effect of temperature on rate constant k.
7. Derivation of Arrhenius equation and evaluation of energy of activation graphically.
8. Derivations of collision theory and transition state theory of bimolecular reaction and comparison.
9. Solve / discuss the problem based applying theory and equations.
9. Define / explain adsorption, classification of given processes into physical and chemical adsorption.
10. Discuss factors influencing adsorption, its characteristics, differentiates types as physisorption and Chemisorption
11. Classification of Adsorption Isotherms, to derive isotherms.
12. Explanation of adsorption results in the light of Langmuir adsorption isotherm, Freundlich's adsorption Isotherm and BET theory.
13. Apply adsorption process to real life problem.
14. Solve / discuss problems using theory.
15. Define, explain and compare meaning of accuracy and precision.

16. Apply the methods of expressing the errors in analysis from results.
17. Explain / discuss different terms related to errors in quantitative analysis.
18. Apply statistical methods to express his / her analytical results in laboratory.
19. Solve problems applying equations.
20. Explain / define different terms in volumetric analysis such as units of concentration, indicator, equivalence point, end point, standard solutions, primary and secondary standards, complexing agent, precipitating agent, oxidizing agent, reducing agent, redox indicators, acid base indicators, metallo-chrome indicators, etc.
21. Perform calculations involved in volumetric analysis.
22. Explain why indicator show color change and pH range of colour change.
23. To prepare standard solution and b. perform standardization of solutions.
24. To construct acid – base titration curves and performs choice of indicator for particular titration.
25. Explain / discuss acid-base titrations, complexometric titration / precipitation titration / redox titration.
26. Apply volumetric methods of analysis to real problem in analytical chemistry / industry

CH-302Inorganic and Organic chemistry

After completion of this course students should be able to

1. Define terms related to molecular orbital theory (AO, MO, sigma bond, pi bond, bond order, magnetic property of molecules, etc.)
2. Explain and apply LCAO principle for the formation of MO's from AO's.
3. Explain formation of different types of MO's from AO's.
4. Distinguish between atomic and molecular orbitals, bonding, anti-bonding and nonbonding molecular orbitals.
5. Draw and explain MO energy level diagrams for homo and hetero diatomic molecules. Explain bond order and magnetic property of molecule.
6. Explain formation and stability of molecule on the basis of bond order.
7. Apply MOT to explain bonding in diatomic molecules other than explained in syllabus.
8. Define different terms related to the coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand, chelate effect, etc.)
9. Explain Werner's theory of coordination compounds. Differentiate between primary and secondary valency. Correlate coordination number and structure of complex ion.
10. Apply IUPAC nomenclature to coordination compound.
11. Identify and draw the structures aromatic hydrocarbons from their names or from structure name can be assigned.
12. Explain / discuss synthesis of aromatic hydrocarbons. 3. Give the mechanism of reactions involved.
13. Explain /Discuss important reactions of aromatic hydrocarbon.
14. To correlate reagent and reactions.
15. Identify and draw the structures alkyl / aryl halides from their names or from structure name can be assigned.
16. Explain / discuss synthesis of alkyl / aryl halides.
17. Write / discuss the mechanism of Nucleophilic Substitution (SN1 , SN2 and SNi) reactions.
18. Explain /Discuss important reactions of alkyl / aryl halides.
19. To correlate reagent and reactions. 6. Give synthesis of expected alkyl / aryl halides.

20. Identify and draw the structures alcohols / phenols from their names or from structure name can be assigned.
21. Able to differentiate between alcohols and phenols
22. Explain / discuss synthesis of alcohols / phenols.
23. Write / discuss the mechanism of various reactions involved.
24. Explain /Discuss important reactions of alcohols / phenols.
25. To correlate reagent and reactions of alcohols / phenols
26. Give synthesis of expected alcohols / phenols.

CH-303 Chemistry Practical-III

After completion of this course students should be able to

1. Verify theoretical principles experimentally.
2. Interpret the experimental data on the basis of theoretical principles.
3. Correlate theory to experiments. Understand/verify theoretical principles by experiment observations; explain practical output / data with the help of theory.
4. Understand systematic methods of identification of substance by chemical methods.
5. Write balanced equation for the chemical reactions performed in the laboratory.
6. Perform organic and inorganic synthesis and is able to follow the progress of the chemical reaction by suitable method (colour change, ppt. formation, TLC).
7. Set up the apparatus / prepare the solutions - properly for the designed experiments.
8. Perform the quantitative chemical analysis of substances explain principles behind it.
9. Systematic working skill in laboratory will be imparted in student.

Course Outcomes S.Y. B.Sc. Chemistry Sem IV

CH-401 Physical and analytical Chemistry

After completion of this course students should be able to

1. Define the terms in phase equilibria such as- system, phase in system, components in system, degree of freedom, one / two component system, phase rule, etc.
2. Explain meaning and Types of equilibrium such as true or static, metastable and unstable equilibrium. Discuss meaning of phase, component and degree of freedom.
3. Derive of phase rule. Explain of one component system with respect to: Description of the curve, Phase rule relationship and typical features for i) Water system ii) Carbon dioxide system iii) Sulphur system.
4. Define various terms, laws, differentiate ideal and no-ideal solutions.
5. Discuss / explain thermodynamic aspects of Ideal solutions-Gibbs free energy change, Volume change, Enthalpy change and entropy change of mixing of Ideal solution.
6. Differentiate between ideal and non-ideal solutions and can apply Raoult's law.
7. Interpretation of i) vapour pressure–composition diagram ii) temperature- composition diagram.
8. Explain distillation of liquid solutions from temperature – composition diagram.
9. Explain / discuss azeotropes, Lever rule, Henrys law and its application.
10. Discuss / explain solubility of partially miscible liquids- systems with upper critical. Solution temperature, lower critical solution temperature and having both UCST and LCST.
11. Explain / discuss concept of distribution of solute amongst pair of immiscible solvents.
12. Derive distribution law and its thermodynamic proof.
13. Apply solvent extraction to separate the components of from mixture interest.

14. Solve problem by applying theory.
15. Explain / define different terms in conductometry such as electrolytic conductance, resistance, conductance, Ohm's law, cell constant, specific and equivalent conductance, molar conductance, Kohlrausch's law, etc.
16. Discuss / explain Kohlrausch's law and its Applications, Conductivity Cell, Conductivity Meter, Whetstone Bridge.
17. Explain / discuss conductometric titrations.
18. Apply conductometric methods of analysis to real problem in analytical laboratory.
19. Solve problems based on theory / equations.
20. Correlate different terms with each other and derive equations for their correlations.
21. Explain / define different terms in Colorimetry such as radiant power, transmittance, absorbance, molar, Lamberts Law, Beer's Law, molar absorptivity
22. Discuss / explain / derive Beer's law of absorptivity.
23. Explain construction and working of colorimeter.
24. Apply colorimetric methods of analysis to real problem in analytical laboratory.
25. Solve problems based on theory / equations.
26. Discuss / explain separation of ionic substances using resins.
27. Discuss / explain separation of substances using silica gel / alumina.
28. Apply column chromatographic process for real analysis in analytical laboratory.

CH-402 Inorganic and Organic Chemistry

After completion of this course students should be able to

1. Explain Isomerism in coordination complexes
2. Explain different types of isomerism in coordination complexes.
3. Apply principles of VBT to explain bonding in coordination compound of different geometries.
4. Correlate no of unpaired electrons and orbitals used for bonding.
5. Identify / explain / discuss inner and outer orbital complexes.
6. Explain / discuss limitation of VBT
7. Explain principle of CFT.
8. Apply crystal field theory to different type of complexes (Td, Oh, Sq. Pl complexes)
9. Explain: i) strong field and weak field ligand approach in Oh complexes ii) Magnetic properties of coordination compounds on the basis of weak and strong ligand field ligand concept. iii) Origin of colour of coordination complex.
10. Explain spectrochemical series, tetragonal distortion / Jahn-Teller effect in Cu(II) Oh complexes only.
11. Identify and draw the structures aldehydes and ketones from their names or from structure name can be assigned.
12. Explain / discuss synthesis of aldehydes and ketones.
13. Write / discuss the mechanism reactions aldehydes and ketones.
14. Explain /Discuss important reactions of aldehydes and ketones.
15. To correlate reagent and reactions of aldehydes and ketones
16. Perform inter conversion of functional groups.
17. Identify and draw the structures carboxylic acids and their derivatives from their names or from structure name can be assigned.
18. Explain / discuss synthesis of carboxylic acids and their derivatives.

19. Write / discuss the mechanism reactions carboxylic acids and their derivatives.
20. Explain /Discuss important reactions of carboxylic acids and their derivatives.
21. Correlate reagent and reactions of carboxylic acids and their derivatives
22. Give synthesis of expected carboxylic acids and their derivatives.
23. Identify and draw the structures amines from their names or from structure name can be assigned.
24. Explain / discuss synthesis of carboxylic amines. Write / discuss the mechanism reactions carboxylic amines.
25. Give synthesis diazonium salt from amines and reactions of diazonium salt.
26. Draw the structures of different conformations of cyclohexane.
27. Define terms such as axial hydrogen, equatorial hydrogen, confirmation, substituted cyclohexane.
28. Draw structures of different conformations of methyl / t-butyl monosubstituted cyclohexane (axial, equatorial) and 1, 2 dimethyl cyclohexane.
29. Identify cis- and trans-isomers of 1, 2 dimethyl substituted cyclohexane and able to compare their stability.

CH-403 Chemistry Practical -IV

After completion of this course students should be able to

1. Verify theoretical principles experimentally.
2. Interpret the experimental data on the basis of theoretical principles.
3. Correlate the theory to the experiments. Understand / verify theoretical principles by experiment or explain practical output with the help of theory.
4. Understand systematic methods of identification of substance by chemical methods.
5. Write balanced equation for all the chemical reactions performed in the laboratory.
6. Perform organic and inorganic synthesis and able to follow the progress of the chemical reaction. 7. Set up the apparatus properly for the designed experiments.
8. Perform the quantitative chemical analysis of substances and able to explain principles behind it.

Choice Based Credit System [CBCS] 2019 Pattern
Third Year Bachelors of Science

(T.Y. B.Sc. CHEMISTRY)

FromAcademicYear2021-22

Programme Outcomes

After successful completion of three-year degree program in Chemistry student should be able to;

PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.
PO-3. Employ critical thinking and the scientific knowledge to design, carryout, record and analyse the results of chemical reactions.
PO-4. Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
PO-5. Find out the green route for chemical reaction for sustainable development.
PO-6. To inculcate the scientific temperament in the students and outside the scientific community.
PO-7. Use modern techniques, decent equipment's and Chemistry software's.

Programme Specific Outcomes.

PSO-1. Gain the knowledge of Chemistry through theory and practical's.
PSO-2. To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.
PSO-3. Identify chemical formulae and solve numerical problems.
PSO-4. Students will acquire knowledge how to use modern chemical tools, Models, Chem-draw, Charts and various instruments in chemical analysis.
PSO-5. Know structure-activity relationship.
PSO-6. Understand good laboratory practices and safety.
PSO-7. Develop research-oriented skills.
PSO-8. To make aware and handle the sophisticated instruments/equipment's.
PSO-9 Students will have knowledge of preparation of Various basic chemical compounds.
PSO 10- Students will acquire knowledge of chemical analysis of Various organic and inorganic chemical compounds.

Course Outcomes B. Sc. Chemistry Semester-VI (2019 pattern)

DSEC-I:CH-501: Physical Chemistry-I

After completion of this course students should be able to

CO-1. Know historical of development of quantum mechanics in chemistry.
CO-2. Understand and explain the differences between classical and quantum mechanics.
CO-3. Understand the term specific volume, molar volume and molar refraction
CO-4 Applications to conjugated systems, zero-point energy and quantum tunnelling,
CO-5. Derive the expression for rotational spectra for the transition from J to J+1
CO-6. Classification of molecules on the basis of moment of Inertia.
CO-7. Explain the difference between Rayleigh, Stokes and anti-Stokes lines in a Raman spectrum.

DSEC-I:CH-502: Analytical Chemistry-I

After completion of this course students should be able to

CO-1. Define basic terms in gravimetry, spectrophotometry, qualitative analysis and parameters in instrumental analysis. Such as: Gravimetry, precipitation, solubility product, ionic product, common ion effect, precipitating agent, washing of ppt., drying and ignition of ppt., linearity range, detection limit, precision, accuracy, Sensitivity, Selectivity, Robustness and Ruggedness, electromagnetic radiations, spectrophotometry, Beers law, absorbance, transmittance, molar absorptivity, monochromator, wavelength of maximum absorbance.
CO-2. Explain different principles involved in the gravimetry, spectrophotometry, parameters in instrumental analysis, qualitative analysis.
CO-3. Understand the principles of Spectro-photometric analysis and properties of electromagnetic radiations.
CO-4. Study the Voltammetry and Polarography as an analytical tool.
CO-5. Perform quantitative calculations depending upon equations student has studied in the theory. Furthermore, student should able to solve problems on the basis of theory.
CO-6, Differentiate / distinguish / Compare among the different analytical terms, process and analytical methods.
CO-7. Apply whatever theoretical principles he has studied in theory during practical session in laboratory.

DSEC-I:CH-503: Physical Chemistry Practical–I

After completion of this course students should be able to

CO1 To determine the specific refractivity's of the given liquids A and B and their mixture and hence determine the percentage composition their mixture C.

CO-2 To determine the molecular refractivity of the given liquids A, B, CandD.

CO-3 To determine the molar refraction of homologues methyl, ethyl and propyl alcohol and show the constancy contribution to the molar refraction by-CH2group.

CO-4 Determine the refractive index of a series of salt solutions and determine the concentration of a salt of unknown solution

CO-3 TotitrateCu^{2+} ions with EDTA photometrically.

CO-4 To determine the indicator constant of methyl red indicator.

CO-5 To estimate of Fe^{3+} ions by thiocyanate method.

CO-6 To determine Cobalt by using R-nitroso salt method.

CO-7 To determine the order of reaction for the oxidation of alcohol by potassium dichromate and potassium permanganate in acidic medium calorimetrically.

CO-8 SimultaneousdeterminationofCu^{2+}andNi^{2+}ionsbycolorimetry/spectrophotometrymethod.

CO-9 Titrate of a mixture of weak acid and strong acid with strong alkali.

CO-10 determine the velocity constant of hydrolysis of ethyl acetate by NaOH solution by conductimetric method.

CO-11 To determine the normality of citric acid in given fruit by titrating it against standard NaOH solution by conductometric method.

CO-12 To determine $\lambda\infty$ of strong electrolyte (NaCl or KCl) and to verify Onsager equation.

CO-13 To estimate the amount of lead present in given solution of lead nitrate by conductometric titration with sodium sulphate.

CO14 To determine the relative strength of monochloroacetic acid and acetic acid conductometrically.

CO-15 To determine the molecular weight of a high polymer by using solutions of different concentrations.

CO16 Determine the radius of glycerol molecule from viscosity measurement.

CO17 Analysis of Riboflavin from vitamin supplementary capsules / syrup / tablet sample by Photo fluro-metry.

DSEC-II:CH-504: Inorganic Chemistry-I

After completion of this course students should be able to

CO-1 Explain electroneutrality principle and different types of pi bonding.

CO-2. Able to compare the different approaches to bonding in Coordination compounds.

CO-3. To understand about inert and labile complexes and stability of complexes in aqueous solutions.

CO-4. Classification of reactions of coordination compounds

CO-5. Gain the knowledge of inorganic reaction mechanisms available in the literature to solve chemical problems.

DSEC-II:CH-505: Industrial Chemistry-I

After completion of this course students should be able to

CO-1. Know the importance of chemical industry.

CO-2. Classify various insecticides.

CO-3. Study the nutritive aspects of food constituents.

CO-4. Understand the characteristics of some food starches.
CO-5. Study the manufacture of cement, dyes, Glass, Soap and Detergents by modern methods.
CO-6. Different types of soap products.

DSEC-II:CH-506: Inorganic Chemistry Practical-I
After completion of this course students should be able to
CO-1 Estimate of Fe asFe_2O_3 Gravimetrically.
CO-2 Estimate of Ba as$BaSO_4$usinghomogeneousprecipitationmethod.
CO-3 Estimate of Nickel as Ni –DMG Gravimetrically.
CO-4 Analyse of sodium bicarbonate from mixture by thermal decomposition method.
CO-5 Determine water of crystallization by thermal decomposition.
CO-6 Analyse of Food/Pharmaceutical sample for as hand sulphate dash example-Aspirin.
CO-7 Prepare inorganic complexes of hexamine nickel (II)chloride,$[Ni(NH_3)_6]Cl_2$.
CO-8 Prepare inorganic complexes of Potassium trioxalato ferrate (III),$K_3[Fe(C_2O_4)_3]$.
CO-9 Prepare inorganic complexes of Manganese (III)acetylacetonate,$[Mn(acac)_3]$.
CO-10 Prepare inorganic complexes of tris(glycinato)nickelate(II),$[Ni(gly)_3]^-$
CO-11 Prepare inorganic complexes of Potassium dioxalato cuprate(II),$[Cu(C_2O_4)_2]^{2-}$.
CO-12 Analyses Inorganic Qualitative mixtures containing borates and phosphates.
CO-13 test for iron, chloride and sulphate from pharmaceutical raw materials.
CO-14 tests of inorganic toxicants of any four ions (Borate, copper, hypochlorite or nitrate or nitrite, Sb or Bi, Iodate,H_2O_2)

DSEC-III:CH-507: Organic Chemistry-I
After completion of this course students should be able to
CO-1. Polynuclear and Heteronuclear Aromatic Compounds: After studying the polynuclear and heteronuclear aromatic compounds, students will able to define and classify polynuclear and heteronuclear aromatic hydrocarbons, write the structure, synthesis of polynuclear and heteronuclear aromatic hydrocarbons.
CO-2. Meaning of active methylene group.
CO-3. Understand stereochemistry by using models and learn reactivity of geometrical isomers
CO-4. Compare between E1 and E2 reactions.
CO-5. Understand the evidences, reactivity and mechanism of various elimination and substitution reactions
CO-6. Hoffmann and Saytzeff's Orientation.
CO-7. Effect of factors on the rate elimination reactions

DSEC-III:CH-508: Chemistry of Biomolecules
After completion of this course students should be able to
CO-1. The student will be understanding of Cell types, Difference between a bacterial cell, Plant cell and animal cell. Biological composition and organization of cell membrane, structure and function of various cell organelles of plant and animal cell. Concepts of biomolecules, Bonds that link monomeric units to form macromolecules.
CO-2. The student will understand the types of carbohydrates and their biochemical significance in living organisms, structure of carbohydrates and reactions of carbohydrates with Glucose as example. Properties of carbohydrates.
CO-3. The student needs to know the types of lipids with examples, structure of lipids, properties of lipids.

CO-4. The student will understand the structure and types of amino acids. Reactions of amino acids. Properties of amino acids. Peptide bond formation. Types of proteins. Structural features in proteins. Effect of pH on structure of amino acid, Determination of N and C terminus of peptide chain.
CO-5 The student know the classes of enzymes with subclasses and examples. Enzyme specificity, Equations of enzyme kinetics Km and its significance, features of various types of enzyme inhibitions, industrial applications of enzymes.
CO-6. Basic concepts of Endocrinology. Types of Endocrine glands and their hormones. Biochemical nature of hormones. Mechanism of action of lipophilic and hydrophilic hormones

DSEC-III:CH-509: Organic Chemistry Practical-I
After completion of this course students should be able to

A) Separation of Binary Mixtures and Qualitative Analysis The students will be able to
CO-1 Perform the quantitative chemical analysis of binary mixture, explain principles behind it.
CO-2 Separate, purify and analyse binary water insoluble mixture.
CO-3 Separate, purify and analyse binary water-soluble mixture.
CO-4 Understand the techniques involving drying and recrystallization by various method.
CO-5 Familiarize the test involving identification of special elements.
CO-6 Learn the confirmatory test for various functional groups.
B) Preparations The students will be able to
CO-1 Systematic working skill in laboratory will be imparted in student.
CO-2Learnthebasicprinciplesofgreenandsustainablechemistry.
CO-3 Synthesis of various organic compounds through greener approach.
CO-4 Do and understand stoichiometric calculations and corelate the green process metrics.
CO-5 Learn alternative solvent media and energy sources for chemical processes.
CO-6 Learn the preparations of derivative various functional groups aspects of electrical experiments.
CO-7 Understand the techniques involving drying and recrystallization by various method.
CO-8 Expertise the various techniques of preparation and analysis of organic substances.
CO-9 Understand principle of Thin Layer Chromatographic techniques.
CO-10 Understand the purification technique used in organic chemistry.

SEC-I:CH-510: Skills Enhancing Course-I

Choose one out of the two options, A and B.
CH-510 (A): Introduction to Medicinal Chemistry.

After completion of this course students should be able to
CO-1. The basics of medicinal chemistry, biophysical properties, overview of basic concepts of traditional systems of medicine
CO-2. Over view of the overall process of drug discovery, and the role played by medicinal chemistry in this process.
CO-3. Biological activity parameters and importance of stereochemistry of drugs and receptors.
CO-4. Knowledge of mechanism of action of drugs belonging to the classes of infectious and non-infectious diseases.
CO-5. Enhancement of practical skills in synthesis, purification and analysis

CH-510(B): Polymer Chemistry

After completion of this course students should be able to

Course Outcome: The students are expected to learn the following aspects of Polymer Chemistry:

1) History of polymers, Difference between simple compounds and polymer, Names of polymers, Various ways of nomenclature.
2) Difference between natural, synthetic, organic and inorganic polymers, Terms Monomer, Polymer, Polymerization, Degree of polymerization, Functionality, Number average, Weight average molecular weight, Mechanisms of polymerization, Polymerization techniques, Uses & properties of polymers.
3) Role of polymer industry in the economy.
4) Advantages of polymers.

SEC-II:CH-511: Skills Enhancing Course-II

Choose one out of the two options, A and B.

CH-511(A): Environmental Chemistry

After completion of this course students should be able to

CO-1. Importance and conservation of environment.

CO-2. Importance of biogeochemical cycles

CO-3 Students should know i. Water resources ii. Hydrological Cycle iii. Organic and inorganic pollutants iv. Water quality parameters.

CO-4. Water pollutants, Eutrophication, Waste water treatment (domestic waste water, aerobic treatment, anaerobic treatment, up flow aerobic sludge bed, industrial waste water treatment, drinking water supplies, Trace elements in water, chemical speciation.

CH-511(B): Cheminformatics

After completion of this course students should be able to

1. Students should understand the significance of cheminformatics in the modern practices of chemical science.
2. Students should learn the necessity of cheminformatics in chemical science.
3. Students should learn the basic concepts about these representation methods.
4. Students should understand the significance of different representation methods for their specific applications.
5. Students should able to identify these representation methods with understanding.
6. Students should able to read these representation methods for basic examples.
7. Students should understand the significance of structural data in the process of referencing.
8. Students should able to correlate the necessity of input methods and the expected outcomes for the set of chemicals.
9. Students should able to understand data interpretation using these methods for basic or representative molecules.
10. Students should able to correlate the content of data with the possible applications for these to chemicals.
11. Studentsshouldgetawarewiththeprincipleandthebasicoperationalmethodsofwell-practicedsoftwareusedin the data interpretation in cheminformatics.
12. Students should learn the basic concepts of Machine Learning and Artificial intelligence

Course Outcomes B. Sc. Chemistry Semester-VI (2019 pattern)

DSEC-IV:CH-601: Physical Chemistry-II

After completion of this course students should be able to

CO-1. photochemical laws: Grothus - Draper law, Stark-Einstein law,

CO-2. Photochemical reactions: photosynthesis, photolysis, photocatalysis, photosensitization

CO-3. Various photochemical phenomena like fluorescence and phosphorescence, Chemiluminescence,

CO-4. Electrochemical cells: Explanation of Daniell cell, Conventions to represent electrochemical cells

CO-5. Types of concentration cells: Concentration cells without and with transference Concentration cells with liquid junction potential.

CO-6. Fuel Cells: Types of fuel cells, advantages, disadvantages of these fuels' cells, comparison of battery Vs fuel cell

CO-7. Methods of Crystal structure analysis: The Laue method and Bragg's method: Derivation of Bragg's equation.

CO-8. Detection and Measurement of Radioactivity: Cloud chamber, Ionization Chamber, Geiger-Muller Counter, Scintillation Counter, Film Badges.

DSEC-IV:CH-602: Physical Chemistry-III

After completion of this course students should be able to

CO-1. Meaning of the terms-Solution, electrolytes, nonelectrolytes and colligative properties

CO-2. Lowering of vapour pressure of solvent in solution.

CO-3. Application of colligative properties to determine molecular weight of nonelectrolyte, abnormal molecular weight.

CO-4. Relation between Vant Hoff's factor and degree of dissociation of electrolyte by colligative property.

CO-5. Factors affecting on solid state reactions.

CO-6. Rate laws for reactions in solid state.

CO-7. Applying rate laws for solid state reactions.

CO-8. Cohesive Energy of ionic crystals based on coulomb's law and Born Haber Cycle

CO-9. Correspondence between energy levels in the atom and energy bands in solid

CO-10. Conductors and insulators – Its correlation with Extent of energy in energy bands

CO-11. Semiconductors – Role of impurity in transformation of insulator into semiconductor

CO-12. Chemical bonding & Molecular forces in Polymer

CO-13. Practical significance of polymer molecular weights.

DSEC-IV:CH-603: Physical Chemistry Practical-II

After completion of this course students should be able to

1) To determine the PKa value of given monobasic weak acid by potentiometric titration.
2) To determine the formal redox potential of Fe_2+/Fe_3+ system potentiometrically.
3) To determine the amount of NaCl in the given solution by potentiometric titration against silver nitrate.
4) To determine the solubility product and solubility of AgCl potentiometrically using chemical cell.
5) Estimate the amount of Cl-, Br- and I-in given unknown halide mixture by titrating it against standard AgNO3 solution (mixture of any two ions).

6) To prepare standard 0.2 M Na2HPO4 and 0.1 M Citric acid solution, hence prepare four different buffer solutions using them. Determine the pH value of these and unknown solution.
7) To determine the composition of Zinc ferrocyanide complex potentiometrically.
8) To determine the standard electrode potentials of Cu and Ag electrodes and to determine the EMF of a concentration cell.
9) To determine the degree of hydrolysis of aniline hydrochloride.
10) To determine the dissociation constant of oxalic acid by pH-metric titration with strong base.
11) Determination of Pka of given weak acid by pH metry titration with strong base
12) To determine the acid and base dissociation constant of an amino acid and hence the isoelectric point of an acid.
13) pH metric titration of strong acid against strong base by pH measurement and hence determine the concentration and strength of strong acid.
14) To determine plateau voltage of the given G M counter.
15) To determine the molecular weight of solute by depression in freezing point method
16) To study the association of Benzoic acid in benzene by Beckmann Method
17) Determine the molecular weight of given electrolyte and non-electrolyte by Landsberger's method and to study the abnormal molecular weight of electrolyte
18) Determination of SO42- and Cl- by turbidimetric method (turbidimetric titration or calibration curve method)
19) To determine the molecular weight of a given polymer by turbidometry.

DSEC-V:CH-604: Inorganic Chemistry -II

After completion of this course students should be able to

CO-1. To know trends in periodic properties of these elements w.r.t. size of atom and ions, reactivity, catalytic activity, oxidation state, complex formation ability, colour, magnetic properties, non-stoichiometry, density, melting point, boiling point.
CO-2. The meaning of term f-block elements, Inner transition elements, lanthanides, actinides.
CO-3. Lanthanide contraction and effects of lanthanide contraction on post-lanthanides.
CO-4. The meaning of metal & semiconductor.
CO-5. Explain the effect of temperature and impurity on conductivity of metals and semiconductors.

DSEC-V:CH-605: Inorganic Chemistry-III
After completion of this course students should be able to

CO-1. To understand M-C bond and to define organometallic compounds
CO-2. To understand the structure and bonding using valence electron count (18 ele. rule)
CO-3. Define and differentiate homogeneous and heterogeneous catalysis.
CO-4. Understand the essential properties of homogeneous catalysts-Give the catalytic reactions for Wilkinson's Catalysis, hydroformylation reaction, Monsanto acetic acid synthesis, Heck reaction.
CO-5. Identify the biological role of inorganic ions & compounds.

DSEC-V:CH-606: Inorganic Chemistry Practical-II
After completion of this course students should be able to

1. Analyze of Phosphate (PO_4^{3-}) from Fertilizer.

2. Analyze of Iodine from Iodized salt.
3. Determine Strength of medicinal H_2O_2.
4. Analyze of Calcium from milk powder.
5. Analyze of Cu from Cu-Fungicide.
6. Estimate of Na by flame photometry by calibration curve method.
7. Estimation of K by flame photometry by regression method.
8. Purification of water using cation/anion exchange resin and analysis by qualitative analysis /conductometry.
9. Synthesize of Silver nano-particles.
10. Synthesize of ZnO nanoparticles.
11. Verify of periodic trends using solubility of alkaline earth metal hydroxides $Ca(OH)_2$, $Mg(OH)_2$,$Cr(OH)_2$, $Ba(OH)_2$.
12. Synthesize of amine complexes of Ni(II) and its ligand exchange reaction (bidentate ligands like acac, DMG, Glycine)by substitution method.

DSEC-VI:CH-607: Organic Chemistry-II
After completion of this course students should be able to

CO-1. Students will learn the principle of mass spectroscopy, its instrumentation and nature of mass spectrum.
CO-2. Students will understand the principle of UV spectroscopy and the nature of UV spectrum. They will learn types of electronic excitations.
CO-3. Students will understand the principle of NMR spectroscopy and will understand various terms used in NMR spectroscopy. They will learn measurement of chemical shift and coupling constants.
CO-4. Students will be able to determine the structure of simple organic compounds on the basis of spectral data such as λ max values, IR frequencies, chemical shift (δ values).
CO-5. The use of models to draw different types of disubstituted cyclo hexanes in chair form.

DSEC-VI:CH-608: Organic Chemistry-III
After completion of this course students should be able to

CO-1. Students will learn different terms used – Disconnection, Synthons, Synthetic equivalence, FGI, TM. One group disconnection, Retrosynthesis and Synthesis of target molecules: Acetophenone, Crotonaldehyde, Cyclohexene, Benzyl benzoate, and Benzyl diethyl malonate.
CO-2. Chemistry of reactive intermediates (carbocations, carbanions, free radicals, carbenes, nitrenes, benzynes etc…)
CO-3. Functional group interconversions and structural problems using chemical reactions.
CO-4. Preparation and Applications of oxidising and reducing reagents.
CO-5. Students will learn extraction, Purification, Some examples of alkaloids and their natural resources. Ephedrine- structure determination using chemical methods, Synthesis of Ephedrine by Nagai

DSEC-VI:CH-609: Organic Chemistry Practical-II
After completion of this course students should be able to
A) Interpretations of IR and PMR Spectra The students will be able to
1. Explain "fingerprint region" of an infrared spectrum can used in the identification of an unknown compound.
2. Identify the functional group or groups presenting a compound.

3. Identify the broad regions of the infrared spectrum in which occur absorptions caused by N−H,C−H, and O−H, C≡C and C≡N, C=O, C=N, and C=C.
4. Understand use NMR spectra to determine the structures of compounds.
5. Interpret integration of NMR spectra
6. Calculate coupling constants from 1-HNMR spectra.
7. Interpret elemental analysis technique

B) Organic Estimations The students will be able to

1. Practical knowledge of handling chemicals.
2. Achieve the practical skills required to estimations of glucose and glycine.
3. Achieve the practical skills required to Saponification value of oil.
4. Determine the molecular weight of given tribasic acids.

C) Organic Extractions The students will be able to

1. Apply the principles of extraction
2. Understand the equipment for extraction.
3. Gain practical hands-on experience of modern Extraction.
4. Developbasicdesign of extractor
5. Describe the extraction separation process.

D) Column chromatography The students will be able to

1. Defines the basic parameters in chromatography
2. Explain the processes of a chromatography analysis.
3. Describes the types and materials of column.
4. Explains the types of mobile phase and elution.
5. Realize the selection of appropriate mobile phase, column and detector.

SEC-III:CH-610: Skill Enhancing Course-III

Choose one out of the two options, A and B.

CH-610(A): Chemistry of Soil and Agrochemicals
Course Outcomes:
After studying this course, student is expected to

1) Understoodvariouscomponentsofsoilandsoilpropertiesandtheirimpactonplantgrowth.
2) Understood the classification of the soil.
3) Exploresttheproblemsandpotentialsofsoilanddecidethemostappropriatetreatmentforland use.
4) UnderstoodtheReclamationandmanagementofsoilphysicalandchemicalconstraints.
5) Useful in making decisions on nutrient dose, choice of fertilizers and method of application etc. Practiced in crop production.
6) Got experience on advanced analytical and instrumentation methods in the estimation of soil.
7) Understood various Nutrient management concepts and Nutrient use efficiencies of major and micro nutrients and enhancement techniques.
8) Proper understanding of chemistry of pesticides will be inculcated among the students.
9) Imparts knowledge on different pesticides, their nature and, mode of action and their fate in soil so as to monitor their effect on the environment.

CH-610 (B) Introduction to Forensic Chemistry

After studying this course, student is expected to

CO-1. After studying this paper the students will know –

a. The significance of forensic science to human society.

b. The fundamental principles and functions of forensic science.

c. The work nature in a forensic science laboratory.

d. Encourage academic students towards the noble career

CO-2. : After studying this paper the students will know –

a. The forensic identification of illicit liquors.

b. The classification and characteristics of the narcotics, drugs and psychotropic substances.

c. The menace of designer drugs.

d. The methods of identifying of narcotics, drugs and psychotropic substance.

SEC-IV:CH-611: Skill Enhancing Course-IV

CH-611(A): Analytical Chemistry-II

After studying this course, student is expected to

CO-1. Know the different analytical techniques.

CO-2. To understand different types of separation techniques.

CO-3. To study principle, construction and working of GC and HPLC.

CO-4. To give an extended knowledge about chromatographic techniques used for separation of amino acids.

CO-5. Discuss the problem based on distribution coefficient and extraction techniques.

CO-6. Identify important parameters in analytical processes or estimations. Example: minimum analyte concentration in particular method, reagent concentration for particular analysis, reagent for particular analysis, reaction condition to convert analyte into measurable form, wavelength selection in HPLC with spectrophotometric and fluorometric detector, solvent or carrier gas in HPLC and GC, choice method for the sample preparation in atomic spectroscopic methods, choice of filter and HCL in atomic spectroscopic methods.

CO-7. Explain different principles involved in the analyses using solvent extraction, basics of instrumental chromatography, HPLC, GC, and atomic spectroscopic techniques.

CO-8. Perform quantitative calculations depending upon equations students has studied in the theory. Furthermore, student should able to solve problems on the basis of theory.

CO-9. Select particular method of analysis if analyte sample is given to him. Differentiate / distinguish / compare among the different analytical terms, process and analytical methods.

CH-611(B): Chemistry of Cosmetics and Perfumes

After studying this course, student is expected to

CO-1, prepare and uses of the following: Hair dye, hairspray, shampoo, lotions, face powder, lipsticks, talcum powder, nail enamel, cream, Eye make-up, Antiperspirants.

CO-2 classify sources of fragrance, natural products in cosmetics.

CO-3 Extract of Essential oils and knows importance and uses in cosmetics.

CO-4 Understands regulations of Central Drugs Standard Control Organization, India Cosmetic Regulation, Steps for process of cosmetic registration in India.

Department of Microbiology

Class: F.Y B.Sc. (2019-CBCS Pattern)

Programme Outcome:
PO-1: Developing skill related to use of optical instruments
PO-2: Understanding the basic difference between prokaryotic and eukaryotic microorganism
PO-3: Know the golden and modern era of microbiology
PO-4: Develop fundamental knowledge of various biomolecules
PO-5: know the growth pattern and cultivation technique of microorganism.

MB-111: Introduction to Microbial World (Sem- I)

CO-1: History of microbiology has been discussed.
CO-2: Different discoveries in microbiology such as pasteurization, germ theory of disease have been discussed.
CO-3: different type of microorganisms and their behavioral pattern has been discussed.
CO-4: To know the scope and application of microbiology.
CO-5: To know the anatomy of prokaryotic cell.
CO-6: To know the Golden and Modern era of microbiology.

MB-112: Basic Techniques in Microbiology (Sem- I)

CO-1: To know the different parts of microscope, types and principle.
CO-2: To study the property of light.
CO-3: To get the theoretical concept regarding various types of microscope: phase contrast, fluorescent, electron microscope.
CO-4: To know the different techniques used for the visualization of bacteria: Gram staining, capsule staining, etc.
CO-5: Develop basic skills in aseptic technique (different sterilization methods).

MB- 113: Practical Course(Sem-I)

CO-1: Students learn basic laboratory etiquettes.
CO-2: Students get introduced to different laboratory instruments.
CO-3: Detailed handling skill of microscope is developed.
CO-4: Microbial examination ability is developed by students.
CO-5: Understands the concepts of normal useful skin flora.

MB-121: Bacterial Cell and Biochemistry (Sem- II)

CO-1: To know the `structural organization of cells and its importance.
CO-2: To know the structure of various biomolecules (carbohydrates, lipids, protein).
CO-3: To understand the classification of microorganism.
CO-4: To understand the classification of microbiological and differential characters of microorganism.
CO-5: Understand the concept and classification of viruses.

MB-122: Microbial Cultivation and Growth (Sem- II)

CO-1: Different methods of cultivation and preservation of bacteria.
CO-2: Culture collection centers and national biodiversity authority for culture collection.
CO-3: Understand the concept of growth and reproduction of bacteria.
CO-4: Understand the enumeration techniques for microbes.
CO-5: To know the factors affecting bacterial growth.

MB-123: Practical Course (Sem-II)

CO-1: Microbial cultivation ability is developed.
CO-2: Staining techniques and morphological studies of microorganisms is carried out.
CO-3: Students get aware about Preservation techniques of different strain.
CO-4: Understand natural habitat of different microorganisms.
CO-5: Study the efficiency of specific instrument in laboratory.

Class: S.Y B.Sc. (2019-CBCS pattern)

Programme Outcome:

PO-1: Development of fundamental knowledge of various biomolecules.
PO-2: Understand the basic concept of enzyme.
PO-3: Understand the different metabolic pathways.
PO-4: Develop the concept of pathogenic microorganisms and their behavioral pattern.
PO-5: Develop fundamental knowledge of immunology, immunohematology, and immunization.
PO-6: Students should get the basic of industrial microbiology, genetics, enzymology systematics.
PO-7: Know the concept of microbial interaction.

MB-211: Medical Microbiology and Immunology (Sem- III)
CO-1: It contain diagnostic and pathogenesis of various diseases.
CO-2: Antimicrobial defense and different toxins covered.
CO-3: Detailed discussion of chemotherapy.
CO-4: Study of fungal pathogens.
CO-5: Different concept and terms of medial microbiology were discussed.

MB-212: Bacterial Physiology and Fermentation Technology (Sem- III)
CO-1: Understand basics of enzymes and classification of enzymes.
CO-2: Various metabolic (biochemical) pathways discussed.
CO-3: Various types of fermentation processes
CO-4: Provide the details of strain improvement and maintenance of industrial strains.
CO-5: Industrial production of primary and secondary metabolite.
CO-6: Provide the details of fermentation medium composition.
MB-213: Practical Course (Sem-III)
CO-1: To understand how to use micrometer and compare the sizes of different Microbes.
CO-2: Develops the techniques of unknown microorganisms from various clinical samples.

CO-3: Develop skill to screen industrial important strains of microorganisms.
CO-4: Study understands the different blood grouping systems.

MB-221: Bacterial Genetics (Sem- IV)
CO-1: Understand the concept of genes and chromosomes.
CO-2: To know the concept of central dogma of protein synthesis (transcription and translation).
CO-3: Understand the concept of replication and different modes of replication.
CO-4: To know the concept of spontaneous and induced mutation.
CO-5: Understand the concept of plasmid (incompatibility, replication, curing, etc.)

MB-222: Air, Water and Soil Microbiology (Sem- IV)
CO-1: To know the basics of air and water microbiology.
CO-2: General idea about air microflora, air pollution and different pollutants.
CO-3: Types of water and water purification methods.
CO-4: Water borne diseases and transmission.
CO-5: To know about different indicators of fecal pollution.
CO-6: To know about rhizosphere microflora , role of microorganisms in composting and humus formation.
CO-7: To know the bacteriological analysis of water for portability.

MB 223: Practical Course (Sem- IV)
CO-1: To know the different kinds of air sampler to calculate the air flora.
CO-2: Calculation of air flora using different mathematical expression.
CO-3: Understand the techniques to check the potability of water based on bacteriological examination.
CO-4: Learns to prepare bio inoculants at laboratory level which are of commercial use.

Class: T.Y B.Sc. (2019-CBCS Pattern)

Microbiology

Programme Outcomes:

After Successful completion of three year degree program in Microbiology students are able to
PO1- Acquire detailed knowledge regarding Antimicrobial components.
PO2 - Develop skills related to Immunohematology Techniques
PO3:- Develop detailed knowledge of Biomolecules
P04:- Develop skills regarding Recombinant Technology
PO5:- Acquire detailed knowledge about Fermentation" Techniques.

Programme Specific Outcomes:
PSO-1:Gain the knowledge of microbiology through theory and practical's.
PSO-2: Understands good laboratory practices & safety.
PSO-3:Develop research oriented skill.
PSO-4:Get aware about the standardize handling of the instruments.

PSO-5:Students will be able to acquire articulate, retain & apply specialized lag & knowledge relevant to microbiology.
PSO-6:Students will communicate specific concept, experimental result & analytical arguments clearly both verbally & in writing.

Sem V

MB-351 Medical Microbiology I

- Understand the human anatomy, pathogens associated with diseases.
- Acquire knowledge of principles underlying establishment of pathogens in human body.
- Comprehend of pathogenesis of specific pathogens causing microbial diseases.

MB-352 Immunology I

- Understand immune system structure, composition, function and comparison of different types of immunity.
- Acquire knowledge about antigens, Recognition of pathogens; antigen processing and presentation; Immunity to infection and pathological consequences of immune deficiencies.

MB-353 Enzymology I

- To understand methods of active site determination, role of enzymes and its cofactors in microbial physiology.
- To learn to perform enzyme assay, purification and quantification of enzymes activity, enzyme kinetics in terms of initial, final velocity, mathematical expression of enzyme kinetic parameters.
- To correlate regulation of metabolism at enzymatic levels and apply, methodology for commercial applications of enzymes

MB-354 Genetics and Molecular Biology I

- To understand methods of active site determination, role of enzymes and its cofactors in microbial physiology.
- To learn to perform enzyme assay, purification and quantification of enzymes activity, enzyme kinetics in terms of initial, final velocity, mathematical expression of enzyme kinetic parameters.

MB-35 Fermentation Technology I

- To impart technical understanding of commercial fermentations.
- To apply classical, advanced strain improvement and isolation techniques for fermentation processes.
- To optimize and sterilize media used in fermentation industry for commercially economical and efficient fermentations.

MB-356 Agricultural and Environmental & Microbiology I

- To understand plant growth improvement with respect to disease resistance, environment tolerance.
- To correlate stages of plant disease development, epidemiology, and symptom based classification, control methods.

Practical course I (MB 357)

- Develop this related to Isolation and Identification ofskills pathogen from clinical samples
- Acquire knowledge regarding Hemogram Techniques.
- Acquire knowledge regarding clinical microbiology

Practical course II (MB 358)

- Understand the methodology of buffer preparation
- Develop skills of DNA isolation
- Understand Estimation of carbohydrate / protein from natural sample

Practical Course III (MB 359)

- Performs sterility testing of pharmaceuticals.
- Develop skills for Isolation of Plant disease causing organism
- Commercial formulations of bioinoculants

Skill Enhancement Course (Sem V)

MB-3510 Marine Microbiology

- To impart the awareness of unseen and unexplored niche of marine ecosystem of microbes.
- To acquire advances in the knowledge of marine microbes and marine ecology.
- To learn the field research on marine processes and laboratory research on microorganisms.
- To comprehend the role of marine microbes in bioremediation and bioprospecting.
- To avail career opportunities in marine education, industry and research.

MB-3511 Dairy Microbiology

- To understand prospects of dairying at commercial marketing.
- To acquire skills of processing of milk and dairy products.
- To assess quality control in dairy industry.
- To comprehend production of dairy products of commercial significance with emphasis to local and global market demand.

Sem VI

MB-361 Medical Microbiology II

- Assess epidemiological patterns of microbial disease transmission as various modes, intensity at local and global level.
- Gain Knowledge principles of chemotherapy of microbial diseases and development of drug resistance among pathogens and strategies to mitigate.
- Develop identification systems for microbial disease diagnosis, disease treatment and prevention measures.

MB-362 Immunology II

- To learn the applications of Immunology in monoclonal antibodies, vaccines production and Immunotherapy.

- Understand abnormal working of Immune system in hypersensitivity, auto immune diseases, immune tolerance and transplantation immunology.
- To develop strategies for Diagnosis of diseases based on antigen and antibody reactions with emphasis on prevailing communicable diseases.

MB-363 Metabolism II

- To learn mechanisms of transport of solutes across the membrane
- To get acquainted with mechanism of biosynthesis and degradation of biomolecules
- To comprehend basic concept of autotrophic mode of metabolism of prokaryotes

MB-364 Genetics and Molecular Biology II

- To correlate regulation of metabolism at enzymatic levels and apply, methodology for commercial applications of enzymes
- To learn mechanisms of transport of solutes across the membrane
- To get acquainted with mechanism of biosynthesis and degradation of biomolecules
- To comprehend basic concept of autotrophic mode of metabolism of prokaryotes

MB-365 Fermentation Technology II

- To recover the product using suitable methods and ensuring quality of the finished product by quality assurance tests.
- To acquaint fermentation economics, process patentability, process validation.
- To comprehend the large scale productions of commercially significant fermentation products of classical and recent significance.

MB-366 Food and Dairy Microbiology II

- To understand the importance of microorganisms in sustainable agriculture, biotechnological application of bio films, edible vaccines.
- To correlate Soil Micro biome and Role of microorganisms in soil health
- To determine the use of Microorganisms as tools in plant genetic engineering.

Practical course I (MB 367)

- Develop skills regarding Immunohematology Techniques.
- study of permanent slides of microbial pathogens
- Demonstrations of Serum protein separation by Electrophorese

Practical course II (MB 368)

- Understands cell division
- Develop skills of plasmid DNA isolation
- Understand isolation and Enumeration techniques for Bacteriophage

Practical Course III (MB 369)

- Study of different SOPs for Pharmaceutical industry.
- Determination of TDP & TOT values
- Study of HACCP guidelines for food industry

Skill Enhancement Course (Sem VI)

MB-3610Waste Management

- To understand waste management and it practicable applicability.
- To assess the magnitude and influence of hazardous content of waste, pollution of waters and waste water treatment technologies.
- To learn the design and working of treatment plants and methods used for liquid and solid waste treatment.
- To impart the understanding of kinetics of biological systems used in waste treatment.
- To learn the standards of waste management and competent authorities involved at National and international level.

MB-3611 Nano Biotechnology

- To understand design, development and application of Nanomaterials and their application in Nanodevices.
- To learn fundamentals of nanotechnology as to Synthesis and characterization techniques of nanoparticles.
- To acquire knowledge of applications of nanomaterials in different disciplines of human life.
- To compare the merits of using nanotechnology with existing technologies.
- Study of HACCP guidelines for food industry

Department of Zoology

COURSE OUTCOMES IN ZOOLOGYSEM-I

ANIMAL DIVERSITY I

CO1. The student will be able to understand classify and identify the diversity of animals.

CO2. The student understands the importance of classification of animals and classifies them effectively using the six levels of classification.

CO3. The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.

ANIMAL ECOLOGY

CO1. The learners will be able to identify and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.

CO2. To understand anticipate, analyse and evaluate natural resource issues and act on a lifestyle that conserves nature.

CO3. The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community.

CO4. The learner will be able to link the intricacies of food chains, food webs and link it with human life for its betterment and for non-exploitation of the biotic and abiotic components.

CO5. The working in nature to save environment will help development of leadership skills to promote betterment of environment.

SEMESTER IIANIMAL DIVERSITY II

CO1. The student will be able to understand classify and identify the diversity of animals.
CO2. The student understands the importance of classification of animals and classifies them effectively using the six levels of classification.
CO3. The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.

CELL BIOLOGY
CO1.The learner will understand the importance of cell as a structural and functional unit of life.

CO2. The learner understands and compares between the prokaryotic and eukaryotic system and extrapolates the life to the aspect of development.

CO3. The dynamism of bio membranes indicates the dynamism of life. Its working mechanism and precision are responsible for our performance in life.

CO4. The cellular mechanisms and its functioning depends on endo-membranes and structures. They are best studied with microscopy.

S.Y.B.Sc SEMESTER III& IV

ANIMAL DIVERSITY III& IV

1. The students will be able to understand, classify and identify the diversity of higher vertebrates.
2. The students will able to understand the complexity of higher vertebrates
3. The students will be able to understand different life functions of higher vertebrates.
4. The students will be able to understand the linkage among different groups of higher vertebrates.
5. The student will become aware regarding his role and responsibility towards nature as a protector, to understand his role as a trustee and conservator of life which he has achieved by learning, observing and understanding life.

APPLIED ZOOLOGY I & II

1. The learner understands the basics about beekeeping tools, equipment, and managing beehives.
2. The learner understands the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques.
3. The learner understands the biology, varieties of silkworms and the basic techniques of silk production.
4. The learner understands the types of agricultural pests, Major insect pests of agricultural importance and Pest control practices.

Department of Botany

Programme Outcomes
PO1. **Knowledge and understanding of:**

1. The range of plant diversity in terms of structure, function and environmental relationships.
2. The evaluation of plant diversity.
3. Plant classification and the flora of Maharashtra.
4. The role of plants in the functioning of the global ecosystem.
5. A selection of more specialized, optional topics.
6. Statistics as applied to biological data.

PO2. **Intellectual skills – able to:**

1. Think logically and organize tasks into a structured form.
2. Assimilate knowledge and ideas based on wide reading and through the internet.
3. Transfer of appropriate knowledge and methods from one topic to another within the subject.
4. Understand the evolving state of knowledge in a rapidly developing field.
5. Construct and test hypothesis.
6. Plan, conduct and write a report on an independent term project.

PO3. **Practical skills:** Students learn to carry out practical work, in the field and in the laboratory, with minimal risk. They gain introductory experience in applying each of the following skills and gain greater proficiency in a selection of them depending on their choice of optional modules.

1. Interpreting plant morphology and anatomy.
2. Plant identification.
3. Vegetation analysis techniques.
4. A range of physiochemical analyses of plant materials in the context of plant physiology and biochemistry.
5. Analyze data using appropriate statistical methods and computer packages.
6. Plant pathology to be added for sharing of field and lab data obtained.

PO4. **Transferable skills:**

1. Use of IT (word-processing, use of internet, statistical packages and databases).
2. Communication of scientific ideas in writing and orally.
3. Ability to work as part of a team.
4. Ability to use library resources.
5. Time management.
6. Career planning.

PO5. **Scientific Knowledge:** Apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyze any plant form.

PO6 . **Problem analysis**: Identify the taxonomic position of plants, formulate the research literature, and analyze non reported plants with substantiated conclusions using first principles and methods of nomenclature and classification in Botany.

PO7. **Design/development of solutions**: Design solutions from medicinal plants for health problems, disorders and disease of human beings and estimate the phytochemical content of plants which meet the specified needs to appropriate consideration for the public health.

PO8. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and development of the information to provide valid conclusions.

PO9. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern instruments and equipment's for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations.

PO10. **The Botanist and society**: Apply reasoning informed by the contextual knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity conservation practice.

PO11. **Environment and sustainability**: Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO12. **Ethics**: Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation.

PO13. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO14. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO15. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO16. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Outcomes

CO1. Critically evaluation of ideas and arguments by collection relevant information about the plants, so as recognize the position of plant in the broad classification and phylogenetic level.

CO2. Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise in the field of Plant Identification.

CO3. Accurately interpretation of collected information and use taxonomical information to evaluate and formulate a position of plant in taxonomy.

CO4. Students will be able to apply the scientific method to questions in botany by formulating testable hypotheses, collecting data that address these hypotheses, and analyzing those data to assess the degree to which their scientific work supports their hypotheses.

CO5. Students will be able to present scientific hypotheses and data both orally and in writing in the formats that are used by practicing scientists.

CO6. Students will be able to access the primary literature, identify relevant works for a particular topic, and evaluate the scientific content of these works.

CO7. Students will be able to apply fundamental mathematical tools (statistics, calculus) and physical principles (physics, chemistry) to the analysis of relevant biological situations.

CO8. Students will be able to identify the major groups of organisms with an emphasis on plants and be able to classify them within a phylogenetic framework. Students will be able to compare and

contrast the characteristics of plants, algae, and fungi that differentiate them from each other and from other forms of life.

CO9. Students will be able to use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth. They will be able to use specific examples to explicate how descent with modification has shaped plant morphology, physiology, and life history.

CO10. Students will be able to explain how Plants function at the level of the gene, genome, cell, tissue, Flower development. Drawing upon this knowledge, they will be able to give specific examples of the physiological adaptations, development, reproduction and mode of life cycle followed by different forms of plants.

CO11. Students will be able to explain the ecological inter connectedness of life on earth by tracing energy and nutrient flow through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities, and ecosystems.

CO12. Students will be able to demonstrate proficiency in the experimental techniques and methods of analysis appropriate for their area of specialization within biology.

Class – F.Y. B.Sc.
Paper I – Plant Diversity and Morphology and Anatomy.

On completion of the course, students are able to:

1. Understand the diversity of Algae, Fungi, Bryophytes, Lichens, Pteridophytes& Gymnosperms.
2. Know the systematic, morphology and structure of Algae, Fungi, Bryophytes, Lichens, Pteridophytes and Gymnosperms.
3. Understand the life cycle pattern of Algae, Fungi, Bryophytes, Lichens, Pteridophytes and Gymnosperms.
4. Know importance and scope of plant Anatomy.
5. Understand the Anatomical and morphological features of Plants.
6. Understand the habit of the angiosperm plant body.
7. Know the vegetative characteristics of the plant.
8. Learn about the reproductive characteristics of the plant.
9. Understand the plant morphology and basic taxonomy.

Class – F.Y.B.Sc. Paper II – Industrial Botany I and II.

On completion of the course, students are able to:

1. Understand the economic importance of the Plants.
2. Become aware of applications of different plants in various industries.
3. To highlight the potential of these studies to become an entrepreneur.
4. To equip the students with skills related to laboratory as well as industries based studies
5. Understand the role plants in human welfare.
6. Gain knowledge about various plants of economic use.
7. Know importance of plants & plant products.

8. Understand the chemical contents of the plant products.
9. Know about the utility of plant resources.

Class – S.Y.B.Sc.Semester I Paper I – Fundamentals of Plant systematic and Plant Ecology

On completion of the course, students are able to:

1. Know the scope and importance of the discipline.
2. Understand plant communities and ecological adaptations in plants.
3. Know the concept of methodology in taxonomy.
4. Learn about conservation of biodiversity, Non-conventional Energy and Pollution.
5. Discover botanical regions of India and vegetation types of Maharashtra.
6. Know the conceptual development of taxonomy and systematic.
7. Understand the Phylogeny of angiosperms -A general account of the origin of Angiosperms.
8. Learn about the characters of biologically important families of angiosperms.
9. Know the floral variations in angiospermic families, their phylogeny and evolution.
10. Understand various rules, principles and recommendations of plant nomenclature produces in plant identification.
11. Understand major evolutionary trends in various parts of angiospermic plants.

Class – S.Y.B.Sc. Semester I Paper II – Plant Physiology.

On completion of the course, students are able to:

1. Know importance and scope of plant physiology.
2. Understand the plants and plant cells in relation to water.
3. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways.
4. Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration.
5. Learn about the movement of sap and absorption of water in plant body.
6. Understand the plant movements.
7. Learn and understand about mineral nutrition in plants.
8. Understand the growth and developmental processes in plants.
9. Know about Photosynthesis and Respiration in plants.
10. Understand the process of translocation of solutes in plants.
11. Know the nitrogen metabolism and its importance.

Class – S.Y.B.Sc.Semester II Paper I – Plant Anatomy and Embryology.

On completion of the course, students are able to:

1. Know the scope and importance of the discipline.
2. Understand the Anatomical features of Plants.
3. Understand major evolutionary trends in various parts of angiospermic plants.
4. Know the methods of pollination and fertilization.
5. Know fertilization, endosperm and embryogeney.
6. Understand the scope & importance of Anatomy.
7. Know various tissue systems.
8. Understand the normal and anomalous secondary growth in plants and their causes.

9. Perform the techniques in anatomy.

Class – S.Y.B.Sc. Semester II Paper II – Plant Biotechnology.

On completion of the course, students are able to Understand:

1. Know about the genomic organization or living organisms, study of genes genome, chromosome etc.
2. Gain knowledge about the mechanism and essential component required for prokaryotic DNA replication.
3. Understand the fundamentals of Recombinant DNA Technology.
4. Know about the Genetic Engineering.
5. Understand the principle and basic protocols for Plant Tissue Culture.
6. The concept of operon and its structure and regulation.

Department of Physics

Program Outcomes:

1. To foster scientific attitude, provide in-depth knowledge of scientific and technological concepts of Physics.
2. To enrich knowledge through problem solving, minor/major projects, seminars, tutorials, review of research articles/papers, participation in scientific events, study visits, etc.
3. To familiarize with recent scientific and technological developments.
4. To create foundation for research and development in Physics.
5. To help students to learn various experimental and computational tools thereby developing analytical abilities to address real world problems.
6. To train students in skills related to research, education, industry and market.
7. To help students to build-up a progressive and successful career in Physics.

Course Outcomes

Mechanics (PHY-111)

On successful completion of this course students will be able to do the following:
1. Demonstrate an understanding of Newton's laws and applying them in calculations of the motion of simple systems.
2. Use the free body diagrams to analyse the forces on the object.
3. Understand the concepts of energy, work, power, the concepts of conservation of energy and be able to perform calculations using them.
4. Understand the concepts of elasticity and be able to perform calculations using them.
5. Understand the concepts of surface tension and viscosity and be able to perform calculations using them.
6. Use of Bernoulli's theorem in real life problems.
7. Demonstrate quantitative problem solving skills in all the topics covered

Physics Principles and Applications (PHY-112)

On successful completion of this course students will be able to do the following:
1. To understand the general structure of atom, spectrum of hydrogen atom.
2. To understand the atomic excitation and LASER principles.
3. To understand the bonding mechanism and its different types.

4. To demonstrate an understanding of electromagnetic waves and its spectrum.
5. Understand the types and sources of electromagnetic waves and applications.
6. To demonstrate quantitative problem solving skills in all the topics covered.

Heat and Thermodynamics (PHY-121)

After successfully completing this course, the student will be able to do the following:
1. Describe the properties of and relationships between the thermodynamic properties of a pure substance.
2. Describe the ideal gas equation and its limitations.
3. Describe the real gas equation.
4. Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process.
5. Analyse the heat engines and calculate thermal efficiency.
6. Analyse the refrigerators, heat pumps and calculate coefficient of performance.
7. Understand property 'entropy' and derive some thermo dynamical relations using entropy concept. 8. Understand the types of thermometers and their usage.

Electricity and Magnetism (PHY-122)
On successful completion of this course students will be able to do the following:
1) To understand the concept of the electric force, electric field and electric potential for stationary charges.
2) Able to calculate electrostatic field and potential of charge distributions using Coulomb's law and Gauss's law.
3) To understand the dielectric phenomenon and effect of electric field on dielectric.
4) To Study magnetic field for steady currents using Biot-Savart and Ampere's Circuital laws.
5) To study magnetic materials and its properties.
6) Demonstrate quantitative problem solving skills in all the topics covered.

Physics paper III: Practical (PHY 123)
After successfully completing this laboratory course, the students will be able to do the following:
1. Acquire technical and manipulative skills in using laboratory equipment, tools, and materials.
2. Demonstrate an ability to collect data through observation and/or experimentation and interpreting data.
3. Demonstrate an understanding of laboratory procedures including safety, and scientific methods.
4. Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena.
5. Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.

Mathematical Methods in Physics (Phy 231)
Learning Outcomes: After the completion of this course students will be able to
• Understand the complex algebra useful in physics courses.
• Understand the concept of partial differentiation.
• Understand the role of partial differential equations in physics.
• Understand vector algebra useful in mathematics and physics.
• Understand the concept of singular points of differential equations.

Electronics (Phy 232)
On successful completion of this course the students will be able to
• Apply different theorems and laws to electrical circuits.
• Understand the relations in electricity.

• Understand the parameters, characteristics and working of transistors.
• Understand the functions of operational amplifiers.
• Design circuits using transistors and applications of operational amplifiers.
• Understand the Boolean algebra and logic circuits.

Practical Course I (Phy 233)
After completing this practical course students will be able to
• Use various instruments and equipment.
• Design experiments to test a hypothesis and/or determine the value of an unknown quantity. • Investigate the theoretical background of an experiment.
• Setup experimental equipment to implement an experimental approach.
• Analyse the data, plot appropriate graphs and reach conclusions from data analysis.
• Work in a group to plan, implement and report on a project/experiment.
• Keep a well-maintained and instructive laboratory logbook.

Oscillations, waves and Sound (Phy 241)
On completion of this course, the learner will be able:
• To study underlying principles of oscillations and it's scope in development.
• To understand and solve the equations / graphical representations of motion for simple harmonic, damped, forced oscillators and waves.
• To explain oscillations in terms of energy exchange with various practical applications.
• To solve numerical problems related to undamped, damped, forced oscillations and superposition of oscillations.
• To study characteristics of sound, decibel scales and applications.

Optics (Phy 242)
On successful completion of this course the students will be able to
• Acquire the basic concept of wave optics.
• Describe how light can constructively and destructively interfere.
• Explain why a light beam spread out after passing through an aperture
• Summarize the polarization characteristics of electromagnetic wave
• Understand the operation of many modern optical devices that utilize wave optics
• Understand optical phenomenon such polarization, diffraction and interference in terms of the wave model
• Analyze simple example of interference and diffraction.

Practical Course II (Phy 243)
After completing this practical course students will be able to
• Use various instruments and equipment.
• Design experiments to test a hypothesis and/or determine the value of an unknown quantity.
• Investigate the theoretical background of an experiment.
• Setup experimental equipment to implement an experimental approach.
• Analyse the data, plot appropriate graphs and reach conclusions from data analysis.
• Work in a group to plan, implement and report on a project/experiment.
• Keep a well-maintained and instructive laboratory logbook.

Department of Mathematics

Program Outcome(B.Sc.):

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

i) The mathematical maturity of students in their current and future courses shall develop.
ii) The student develops theoretical, applied and computational skills.
iii) The student gains confidence in proving theorems and solving problems.

Program Outcome (B.Sc.(Computer science)

(i) A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
(ii) A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
(iii) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

Course outcome in mathematics
Class: F.Y.B.Sc.(2019 credit system)
Program Outcomes :
(i) Give the students a sufficient knowledge of fundamental principles,methods and a clearperception of in numerous power of mathematical ideas and tools and know how to use them by modelling ,solving and interpreting.

(ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science and technology.

(iii)Enhancing students' overall development and to equip them with mathematical modelling abilities, problem solving skills , creative talent and power of communication necessary for various kinds of employment .

(iv) Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

Course Outcomes :
Upon successful completion of this course, the student will be able to:
i) The mathematical maturity of students in their current and future courses shall develop.
ii) The student develops theoretical, applied and computational skills.
iii) The student gains confidence in proving theorems and solving problems.

Class: S.Y.B.Sc.(2020 credit system)
Program Outcomes :
i)Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of in numerous power of mathematical ideas and tools and know how to use them by modelling ,solving and interpreting.

ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
iii) Enhancing students overall development and to equip them with mathematical modelling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment .
iv) Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

Course Outcomes :

(i) A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.
(ii) A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.
(iii) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.
(iv) A student be able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.
(v) A student should be made aware of history of mathematics and hence of its past, present and future role as part of our culture.

F.Y.B.Sc.(Computer Science)(2019 Credit system)

Program Outcomes :

(i) Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerous power of mathematical ideas and tools and know how to use them by modeling ,solving and interpreting.
(ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science and technology.

(iii) Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills , creative talent and power of communication necessary for various kinds of employment .

(iv) Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

Course Outcome:

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

i) A students should be able to work with graphs and identify certain parameters and properties of the given graphs.

ii) A students should be able to perform certain algorithms, justify why these algorithms work, and give some estimates of the running times of these algorithms.

iii) A students should be able to solve basic exercises of the type: given a graph with properties X, prove that the graph also has property Y.

iv) A students should develop an appreciation for the literature on the subject and be able to read and present results from the literature.

v)A students should be able to write cohesive and comprehensive solutions to exercises and be able to defend their arguments.

S.Y.B.Sc.(Computer Science)(2020 Credit system)

Program Outcomes :

i)Give the students a sufficient knowledge of fundamental principles ,methods and a clear perception of innumerous power of mathematical ideas and tools and know how to use them by modeling ,solving and interpreting.

ii) Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.

iii) Enhancing students overall development and to equip them with mathematical modeling abilities, problem solving skills , creative talent and power of communication necessary for various kinds of employment .

iv) Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study

Course Outcomes:

(i) A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays, state important facts resulting from their studies.

(ii) A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.

(iii) A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

(iv) A student be able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.

(v) A student should be made aware of history of mathematics and hence of its past, present and future role as part of our culture.

Department of Statistics

COURSE OUTCOME IN STATISTICS

F.Y.B.Sc. (w.e.f. 2019-2024) Paper I: Descriptive Statistics

Objectives:

- to compute various measures of central tendency, dispersion, skewness and kurtosis.
- to analyze data pertaining to attributes and to interpret the results.

- to compute the correlation coefficient for bivariate data and interpret it.
- to fit linear, quadratic and exponential curves to the bivariate data to investigate relation between two variables.
- to fit linear regression model to the bivariate data
- to compute and interpret various index numbers.
- The main objective of this course is to acquaint students with some basic concepts in Statistics.
- They will be introduced to some elementary statistical methods of analysis of data. At the end of this course students are expected to be able,
- to compute various measures of central tendency, dispersion, skewness and kurtosis.
- to analyze data pertaining to attributes and to interpret theresults.

Paper II: Discrete Probability and Probability Distributions

Objectives:

- to distinguish between random and non-random experiments.
- to find the probabilities of events.
- to obtain a probability distribution of random variable (one or two dimensional) in the given situation, and
- to apply standard discrete probability distribution to different situations.

S.Y.B.Sc. (w.e.f.2020-2025)

Objectives:

- To fit various discrete and continuous probability distributions and to study various real life situations.
- To identify the appropriate probability model that can be used.
- To use forecasting and data analysis techniques in case of univariate and multivariate data sets.
- To use statistical software packages.
- To test the hypotheses particularly about mean, variance, correlation, proportions and goodness of fit.
- To study applications of statistics in the field of demography etc.

Department of Electronics

F.Y.B.Sc.(Regular) Revised from 2019

Course Outcomes

Semester 1

Theory Paper I: EL- 111: Basics of Applied Electronics

1. To identify different parameters/functions/specifications of components used in elec.ckts circuits
2. To solve problems based on network theorems.
3. To perform simulations using simulator for analyzing network performance

Theory paper 2 Paper II: EL- 112: Electronic Devices and Circuits

1. To analyze performance parameters based on study of characteristics of electronic devices like diode, transistors etc

2. To choose proper electronic devices as per the need of application
3. To perform simulations for designing and analyzing diode/transistor circuits
4. To build and test the circuits like street light controller using electronic devices

Practical Paper EL-113

1. To identify different components and devices as well as their types
2. To understand basic parameters associated with each device
3. To know operation of different instruments used in the laboratory
4. To connect circuit and do required performance analysis
5. To compare simulated and actual results of a given particular experiment.
6. .To verify Maximum Power Transfer Theorem
7. To verify Superposition theorem
8. To study application circuit of LED
9. How it works: GSM, GPS and Bluetooth(Assignment experiment)
10. Simulation experiment using pSpice (any of the above experiment)

Semester 2

Paper I: EL-121: Fundamentals of Digital Electronics

1. To solve problems based on interconversion of number systems
2. To reduce the expression using Boolean theorems
3. To reduce expressions using K maps in SOP and POS forms
4. To understand how to use flip flops to build modulus counter
5. To familiarize with applications of counters like ring counter or event counter

Paper II: EL- 122: Analog and Digital Device applications

1. To compare different op-amps as per specifications or performance parameters
2. To understand op-amp circuits and its usefulness in different applications
3. To know operating principle of IC 555 in different configurations
4. To understand different types of DAC and their performance parameters
5. To study different types of ADC and their performance parameters

Practical paper EL-123:

1. To connect op-amp circuits and analyze the output
2. To build application circuits of op-amp
3. To design the output frequency of IC 555 as astable/monostable multivibrator
4. To compare simulated and actual results of given circuit

Electronic Science

F.Y.B.Sc.(computer science) Revised from 2019

Course Outcomes

Semester 1

Paper I ELC-111: Semiconductor Devices and Basic Electronic Systems

1. To study various types of semiconductor devices
2. To study elementary electronic circuits and systems

PAPER II ELC 112: Principles of Digital Electronics

1. To get familiar with concepts of digital electronics
2. To learn number systems and their representation
3. To understand basic logic gates, Boolean algebra and K-maps
4. To study arithmetic circuits, combinational circuits and sequential circuits

Practical paper Paper III ELC-113: ELECTRONICS LAB IA

- Identification of Components (Passive and Active) /Tools • Minimum 10 different types of components must be given • Identification based on visual inspection / data sheets be carried out
- Use of Digital Multimeters • Measurement of AC/DC voltage and Current – on different ranges • Measurement of R &C • Testing of Diodes &Transistors • Measurement of β. • Use of Multimeter in measurement of Resistance of LDR and Thermistor
- Study of Signal Generator & CRO • Understand how to use Signal Generator, CRO • Study of front panel controls of both • Measurement of amplitude and frequency of Sine/Square waveform • Measurement of Phase with the help of RC circuit • Demonstration of Lissajous figures • Demonstrate the use of Component testing facility

SEMESTER 2

PAPER I ELC 121: Instrumentation Systems

1. To study Instrumentation System
2. To study various blocks of Instrumentation System
3. To study Smart Instrumentation System

PAPER II ELC 122 : Basics of Computer Organisation

1. To get familiar digital sequential circuits
2. To study Basic computer Organization
3. To study Memory architecture

Paper III ELC-123: Electronics Lab IB

1.Hobby projects
2.Industrial visit / live work experience
3.PCB Making
4.Market Survey of Electronic Systems
5.Circuit Simulations and CAD tools

Electronic Science

S.Y.B.Sc.(Computer Science) Electronics Revised from 2020

Semester 3

Paper-I: Microcontroller Architecture & Programming (ELC-231)

1.To write programs for 8051 microcontroller
2.To interface I/O peripherals to 8051 microcontroller
3.To design small microcontroller based projects

Paper-II Digital Communication and Networking (ELC- 232)

1. Define and explain terminologies of data communication
2. Understand the impact and limitations of various digital modulation techniques 3. To acknowledge the need of spread spectrum schemes.
4.Identify functions of data link layer and network layer while accessing communication link
5.To choose appropriate and advanced techniques to build the computer network

Paper III-Practical Course (ELC-233)

1.To design and build his/her own microcontroller based projects.
2.To acquire skills of Embedded C programming
3.To know multiplexing and modulation techniques useful in developing wireless application
4. Do build and test own network and do settings.

Semester 4

Paper I : Embedded System Design (ELC-241)

1. To understand the difference between general computing and the Embedded systems.
2. To know the fundamentals of embedded systems.
3. Understand the use of Single board Computer (Such as Raspberry Pi) for an embedded system application.
4. Familiar with the programming environment to develop embedded systems and their interfaces with peripheral devices.
5. To develop familiarity with tools used to develop in an embedded environment.

Paper II: Wireless Communication and Internet of Things (ELC242)

1. Know working of wireless technologies such as Mobile communication, GSM, GPRS
2. Become familiar with 3G and 4G Cellular Network Technologies for Data Connections.
3. Understand working principles of short range communication application
4. Get introduce to upcoming technology of Internet of Things
5. Explore themselves and develop new IoT based applications

Paper III, Practical Course (ELC-243)

1. To design and develop own smart applications using Rasberry-Pi
2. To write Python program for simple applications
3. To build own IoT based syste

Electronic Science

S.Y.B.Sc. (Regular) (Electronic Science) Revised from 2020

Semester-3

Paper – I: Communication Electronics

This course provides basic knowledge of analog (continous wave) and digital communication systems. After study through lectures and assignment, student will be able to
1.Understand different blocks in communication systems, types of noise in communication systems and its different parameters
2. Understand need of modulation, modulation process and amplitude modulation and demodulation methods

3. Analyse generation of FM Modulation and demodulation methods and comparison between amplitude and frequency modulation
4. Identify different radio receivers and their performance parameters.
5. Solve problems based on AM and FM performance parameters 6. Compare pulse modulation techniques such as PAM, PPM, PWM and compare TDM and FDM techniques used in communication
7. Understand need of sampling and sampling theorem as well as know about performance parameters of digital communication
8. Analyze difference between ASK, FSK , PSK as well as PCM and its applications

Paper- II: Digital Circuit Design

This course provides basic knowledge about systematic methodology of designing digital systems . After study through lectures and assignment, student will be able to 1.Distinguish between different logic families based on their performance parameters
2.Analyze basic combinational logic circuits for simple applications
3.Design combinational logic circuits using K maps for identified applications
4.Design Sequential logic circuits using state diagram, excitation table for identified applications
5.Understand and compare different types of ADC and their performance parameters using data sheets/manuals
6. Understand and compare different types of DAC and their performance parameters using data sheets/manuals

Paper- III: Practical Course:

This course provides hands on experience in communication and digital circuits, which can be conducted by standard circuits. Investigate the operation of several communication circuits and digital circuits (Combinational and sequential). Upon completion of this course student will be able to
1.Describe and explain the techniques of generation of AM/ FM and demodulation
2. Design FSK generation using standard IC XR 2206 refering data manuals
3. Describe and explain the TDM/ FDM generation technique
4. Demonstrate PPM/PWM/PAM and PCM techniques using standard circuits in data manuals
5. Design and build minimum complexity digital circuits using logic gates
6. Design and analyze different combinational and sequential logic circuits using standard ICs in data manuals
7. Design ADC/ DAC using data manuals and study its performance parameters

Semester 4

Paper - I: Analog Circuit Design

This course provides basic knowledge about systematic methodology of designing analog systems . After study through lectures and assignment, student will be able to 1. Design single/multistage amplifier using transistor and analyze their frequency response base on gain-bandwidth product due to coupling /bypass capacitors
2.Classify and compare different power amplifiers
3. Understand and design push pull amplifier and need of heat sinks
4.Distinguish between Opamp Feedback circuits based on their configurations
5. Analyze the effect of negative and positive feedback on characteristics of Opamp
6. Understand and analyze the need of positive feedback in oscillator circuits
7. Design ,develop and build circuits for identified applications

Paper II: Microcontroller and Python Programming

This course introduces students with microcontroller using Arduino as well as develops programming ability using python language . After study through lectures and assignment, student will be able to

1. Identify the features and architectural details of microcontroller(arduiono)
2. Write code/program using open source programming language(ardiuno) for basic identified applications
3. Understand programming basics of python programming language
4. Understand special features of python programming language such as importing modules, directory, tupules
5. Design , build and implement applications using ardiuno and python

Paper- III: Practical Course:

This course provides hands on experience in communication and digital circuits, which can be conducted by standard circuits. Investigate the operation of several communication circuits and digital circuits (Combinational and sequential). Upon completion of this course student will be able to

1. Describe and explain the design procedure of different types of active filters and analyze its frequency response
2. Demonstrate positive feedback for oscillator circuits using standard ICs
3. Describe and explain design procedure for two stage am
plifiers and application circuits
4. Design practical circuits for identified applications
5. Develop working setup and write programs using programming techniques of arduino
6. Demonstrate and explain interfacing hardware to arduino microcontroller
7. Solve problems using programming techniques of python

Department of Computer Science

Program outcomes for the computer science program

PO:1 Students will possess problem-solving skills, especially those required to analyze, design and implement solutions involving the use of a computer.

PO:2 Students will have a thorough understanding in current computing systems and the theoretical aspects of computer science.

PO:3 Challenge students to consider the ethical and social impacts of technology, for responsible action as a professional.

PO:4 Prepare students for current and continued learning in a rapidly changing discipline of computer science and technology.

PO:5 Students will attain an ability to apply knowledge of computing and mathematics appropriate to the discipline.

PO:6 Students will attain an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

PO:7 Students will attain an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

PO:8 Students will attain an ability to function effectively on teams to accomplish a common goal.

PO:9 Students will attain an understanding of professional, ethical, legal, security and social issues and responsibilities.

PO:10Students will attain an ability to use current techniques, skills, and tools necessary for computing practice.

PO:11Students will attain an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.

PO:12Students will attain an ability to apply design and development principles in the construction of software systems of varying complexity.

F.Y.B.Sc(Computer Science)Choice Based Credit System

Semester-I

Problem Solving Using Computer and 'C' Programming - I (CS101)

CO-1 Explore algorithmic approaches to problem solving.

CO-2 Develop modular programs using control structures and arrays in 'C'.

Database Management Systems (CS102)

CO-1 Solve real world problems using appropriate set, function, and relational models.

CO-2 Design E-R Model for given requirements and convert the same into database tables.

CO-3 Use SQL

Practical course on Problem Solving using Computer and 'C' programming and Database Management Systems (CS103)

CO-1 Devise pseudocodes and flowchart for computational problems.

CO-2 Write, debug and execute simple programs in 'C'.

CO-3 Create database tables in postgreSQL.

CO-4 Write and execute simple, nested queries.

Semester-II

Advanced 'C' Programming (CS201)

CO-1 Develop modular programs using control structures, pointers, arrays, strings and structures

CO-2 Design and develop solutions to real world problems using C.

Relational Database Management Systems (CS202)

CO-1 Design E-R Model for given requirements and convert the same into database tables.

CO-2 Use database techniques such as SQL & PL/SQL

CO-3 Explain transaction Management in relational database System.

CO-4 Use advanced database Programming concepts

Practical Course on Advanced 'C' Programming and Relational Dstabase Management Systems (CS 203)

CO-1 Write, debug and execute programs using advanced features in 'C'.

CO-2 To use SQL & PL/SQL.

CO-3 To perform advanced database operations.

S.Y.B.Sc (Computer Science)

Semester-III

Data Structures and Algorithms – I (CS231)

CO-1 To use well-organized data structures in solving various problems.

CO-2 To differentiate the usage of various structures in problem solution.
CO-3 Implementing algorithms to solve problems using appropriate data structures.

Software Engineering (CS 232)

CO-1 Compare and chose a process model for a software project development.
CO-2 Identify requirements analyze and prepare models.
CO-3 Prepare the SRS, Design document, Project plan of a given software system.

Practical course on CS 231 (Data Structures and Algorithms I) and CS 232 (Software Engineering) (CS 233)

CO-1 Design and implement Data structures and related algorithms
CO-2 Understanding the steps of system analysis and design
CO-3 Understanding Data requirements for a specific problem domain

Semester-IV

Data Structures and Algorithms -II (CS-241)

CO-1 Implementation of different data structures efficiently
CO-2 Usage of well-organized data structures to handle large amount of data.
CO-3 Usage of appropriate data structures for problem solving.

Computer Networks-I (CS-242)

CO-1 Have a good understanding of the OSI and TCP/IP Reference Models and in particular have a good knowledge of Layers.
CO-2 Understand the working of various protocols.
CO-3 Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies

Practical course on CS 241(Data Structures and Algorithms II) and CS 242 (Computer Networks I)

CO-1 Understand several ways of solving the problem.
CO-2 Designing Data base as per the Data requirements
CO-3 Designing queries as per the functional requirements

T.Y.B.Sc. (Computer Science)

Semester-V

Operating Systems – I (CS-351)

CO-1 Processes and Thread Scheduling by operating system
CO-2 Synchronization in process and threads by operating system
CO-3 Memory management by operating system using with the help of various schemes

Computer Networks - II(CS-352)

CO-1 Understand the different protocols of Application layer.
CO-2 Develop understanding of technical aspect of Multimedia Systems
CO-3 Develop various Multimedia Systems applicable in real time.
CO-4 Identify information security goals.
CO-5 Understand, compare and apply cryptographic techniques for data security.

Web Technologies - I (CS-353)

CO-1 Understand how to develop dynamic and interactive Web Page
CO-2 Learn Core-PHP, Server Side Scripting Language
CO-3 Learn PHP-Database handling

Foundations of Data Science (CS-354)

CO-1 Perform Exploratory Data Analysis
CO-2 Obtain, clean/process, and transform data.
CO-3 Detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization.
CO-4 Demonstrate proficiency with statistical analysis of data.
CO-5 Present results using data visualization techniques.
CO-6 Prepare data for use with a variety of statistical methods and models and recognize how the quality of the data and the means of data collection may affect conclusions.

Object Oriented Programming using Java - I (CS-355)

CO-1 Understand the concept of classes, object, packages and Collections.
CO-2 To develop GUI based application.

Theoretical Computer Science (CS-356)

CO-1 Understand the use of automata during language design.
CO-2 Relate various automata and Languages.

Practical Course based on CS - 351 (CS-357)

CO-1 Process synchronization
CO-2 Processes and Thread Scheduling by operating system
CO-3 Memory management by operating system using with the help of various schemes

Practical Course based on CS - 353 and CS - 354 (CS-358)

CO-1 Understand how to develop dynamic and interactive Web Page
CO-2 Prepare data for use with a variety of statistical methods and recognize how the quality of the data may affect conclusions.
CO-3 Perform exploratory data analysis

Practical Course based on CS - 355 (CS - 359)

CO-1 Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
CO-2 Read and make elementary modifications to Java programs that solve real-world problems.
CO-3 Validate input in a Java program.

Python Programming (CS-3510)

CO-1 Develop logic for problem solving
CO-2 Determine the methods to create and develop Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
CO-3 To be familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc.
CO-4 To write python programs and develop a small application project

Blockchain Technology (CS-3511)

CO-1 Learn the fundamentals of Blockchain Technology.
CO-2 Learn Blockchain programming
CO-3 Basic knowledge of Smart Contracts and how they function.

T.Y.B.Sc. (Computer Science)
Semester-VI
Operating Systems-II (CS-361)

CO-1 Management of deadlocks and File System by operating system
CO-2 Scheduling storage or disk for processes
CO-3 Distributed Operating System and its architecture and the extended features in mobile OS.

Software Testing (CS-362)

CO-1 To understand various software testing methods and strategies.
CO-2 To understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software.
CO-3 To design test cases and test plans, review reports of testing for qualitative software.
CO-4 To understand latest testing methods used in the software industries.

Web Technologies - II (CS-363)

CO-1 Build dynamic website.
CO-2 Using MVC based framework easy to design and handling the errors in dynamic website.

Data Analytics (CS-364)

CO-1 Use appropriate models of analysis, assess the quality of input, and derive insight from results.
CO-2 Analyze data, choose relevant models and algorithms for respective applications
CO-3 Understand different data mining techniques like classification, prediction, clustering and association rule mining
CO-4 Apply modeling and data analysis techniques to the solution of real world business problems

Object Oriented Programming using Java – II (CS-365)

CO-1 To access open database through Java programs using Java Data Base Connectivity (JDBC) and develop the application.
CO-2 Understand and Create dynamic web pages, using Servlets and JSP.
CO-3 Work with basics of framework to develop secure web applications.

Compiler Construction (CS-366)

CO-1 Understand the process of scanning and parsing of source code.
CO-2 Learn the conversion code written in source language to machine language.
CO-3 Understand tools like LEX and YACC.

Practical Course based on CS - 361 (CS-367)

CO-1 Management of deadlocks by operating system
CO-2 File System management
CO-3 Disk space management and scheduling for processes

Practical Course based on CS - 363 and CS - 364 (CS - 368)

CO-1 Build dynamic website.
CO-2 Using MVC based framework easy to design and handling the errors in dynamic website.

Practical Course based on CS - 365 (CS-369)

CO-1 To Learn database Programming using Java
CO-2 Understand and Create dynamic web pagesusing Servlets and JSP.
CO-3 Work with basics of framework to develop secure web applications

Software Testing Tools (CS-3610)

CO-1 To understand various software testing methods and strategies.
CO-2 To understand a variety of software metrics and identify defects and managing those defects for improvement in quality for given software.
CO-3 To design test cases and test plans, review reports of testing for qualitative software.
CO-4 To understand latest testing tools used in the software industries.

Project (CS-3611)

CO-1 Work in a team

M.Sc(Computer Science) Choice Based Credit System
Semester-I

Paradigm of Programming Language(CSUT111)

CO-1 Separate syntax from semantics
CO-2 Compare programming language designs
CO-3 Understand their strengths and weaknesses
CO-4 Learn new languages more quickly
CO-5 Understand basic language implementation techniques
CO-6 Learn small programs in different programming Languages

Design and Analysis of Algorithm (CSUT112)

CO-1 To design the algorithms
CO-2 To select the appropriate algorithm by doing necessary analysis of algorithms
CO-3 To learn basic Algorithm Analysis techniques and understand the use of asymptotic notation
CO-4 Understand different design strategies
CO-5 Understand the use of data structures in improving algorithm performance
CO-6 Understand classical problem and solutions
CO-7 Learn a variety of useful algorithms
CO-8 Understand classification of problems
CO-9 To provide foundation in algorithm design and analysis
CO-10 To develop ability to understand and design algorithms in context of space and time complexity.

Database Technologies (CSUT113)

CO-1 Provide an overview of the concept of NoSQL technology.
CO-2 Provide an insight to the different types of NoSQL databases
CO-3 Make the student capable of making a choice of what database technologies to use, based on their application needs.

Artificial Intelligence (CSDT114B)

CO-1 To learn various types of algorithms useful in Artificial Intelligence (AI).
CO-2 To convey the ideas in AI research and programming language related to emerging technology.
CO-3 To understand the numerous applications and huge possibilities in the field of AI that goes beyond the normal human imagination.

M.Sc(Computer Science) Choice Based Credit System
Semester-II

Advanced Operating System (CSUT121)

CO-1 This course teaches Advanced Operating Systems Concepts using Unix/Linux.
CO-2 This course strikes a delicate balance between theory and practical applications In fact, most Units start with the theory and then switches focus on how the concepts are implemented in a C program.
CO-3 This course describes the programming interface to the Unix/Linux system - the system call interface.
CO-4 It is intended for anyone writing C programs that run under Unix/Linux.
CO-5 This course provides an understanding of the functions of Operating Systems.
CO-6 It also provides provide an insight into functional modules of Operating Systems.
CO-7 It discusses the concepts underlying in the design and implementation of Operating Systems.

Mobile Technologies (CSUT122)

CO-1 To impart basic understanding of the wireless communication systems.
CO-2 To expose students to various aspects of mobile and ad-hoc networks.
CO-3 Understand the issues relating to Wireless applications Understand the Mobile security

Software Project Management (CSUT123)

CO-1 Software Metrics and Project Management covers skills that are required to ensure successful medium and large scale software projects.
CO-2 It examines Requirements Elicitation, Project Management, Verification &Validation and Management of Large Software Engineering Projects.
CO-3 Students learn to select and apply project management techniques for process modelling, planning, estimation, process metrics and risk management; perform software verification and validation using inspections, design and execution of system test cases.

M.Sc. (Computer Science) Choice Based Credit System
Sem-III

Software Architecture and Design Patterns (CSUT231)

CO-1 Recognize the characteristics of patterns that make it useful to solve real-world problems.
CO-2 Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problem.
CO-3 Able to use specific frameworks as per applications need.
CO-4 Design java application using design pattern techniques.

Machine Learning (CSUT232)

CO-1 Recognize the characteristics of patterns that make it useful to solve real-world problems.
CO-2 Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve given problem.

CO-3 Able to use specific frameworks as per applications need.
CO-4 Design java application using design pattern techniques.

Web Frameworks (CSUT233)

CO-1 Students will be ready with the technology which is used widely in Industry as a part of full stack developer.
CO-2 Students will know the powerful way to develop the web application in Python.
CO-3 Students will understand what really the asynchronous programming.
CO-4 Build and deploy robust Django Web App.
CO-5 Integrate with Restful web services.

Practical on CSUT231, CSUT232 and CSUT233 (CSUP235)

CO-1 Able to use specific frameworks as per applications need.
CO-2 Design java application using design pattern techniques.
CO-3 Process available data using python libraries and predict outcomes using Machine Learning algorithms to solve
CO-4 Able to estimate Machine Learning models efficiency using suitable metrics.

M.Sc. (Computer Science) Choice Based Credit System

Semester-IV

CSUIT241 : Industrial Training /Institutional project

Department of Commerce

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Programme outcomes:

After successful completion of threeyear degree programme in commerce student should be able to…

1. The powers conferred by the RBI and its guidelines are the parameter is made known to the students.
2. An Understanding solved and recognised practical. The students are well acquainted with the development in the industries.
3. The new trends in banking sector is made loan to the students with the help of Banking Regulation Act,1949
4. Use of modern technology such as Tally ERP -9.00 and GST
5. The Role of GST in the economic prosperity and its practical Application is familiar to the students.
6. SEBI guideline and its impact on stock exchange is been an important contribution to the society is imparted to the students.
7. Awareness of income tax and structure is made familiar to the students.
8. Corporate social Responsibility of the company and its implementation according to the companies Act 2013 has to be practice are mandatory.

- **Programme specific outcomes:**

PSO-1 To know the marketing Mix concepts
PSO-2.Gain the knowledge of banking through theory and practical
PSO-3.Importance of soft skill is well-known to the students.
PSO-4.The theories of Maslow, McGregor, Henry Fayola, ,F.W.Taylor, Ouchi,has practical relevance.
PSO-5.Accounting standards and its various concept has been made known to the students
PSO-6 Employee provident funds and Bonus Act usefulness is being made known to the students
PSO-7 Understand the GST & Income tax concept up-to-date.
PSO-8 Gain the knowledge of ascertainment of cost through theory and practical.

F.Y.B.Com (Credit pattern 2019)

Sem I

Course outcomes:
After completion of this courses student should be able to……
112 FinancialAccounting:
1. To impart the knowledge of various accounting concepts
2. To instill the knowledge about accounting procedures, methods and techniques.
3. To acquaint them with practical approach to accounts writing by using software package.

113 Business Economics (Micro)
1. To expose Students of Commerce to basic micro economic concepts and inculcate an analytical Approach to the subject matter.
2. To stimulate the student interest by showing the relevance and use of various economic theories.
3. To apply economic reasoning to problems of business.

115 – a. Organizational Skill Development.
1. To orient the students towards the concept of Organization and Modern Office.
2. To acquaint the students with the role of and Functions of Office Manager.
3. To develop the insights regarding Organizational Skills for Office Managers.
4. To know the functioning of Modern office appliances equipments and e- format records

115 – b. Banking and Finance [Fundamentals of Banking]
1. To acquaint the students with the fundamentals of banking.
2. To develop the capability of students for knowing banking concepts and Operations.
3. To make the students aware of banking business and practices.
4. To give thorough knowledge of banking operations.
5. To enlighten the students regarding the new concepts introduced in the banking system

116 – c. Marketing and Salesmanship [Fundamentals of Marketing]
a) To understand the basic concept of marketing.
b) To understand marketing philosophy and generating ideas for marketing research.
c) To know the relevance of marketing in modern competitive world.
d) To develop an analytical ability to plan for various marketing strategy.

116 – d. Consumer Protection and Business Ethics

1) To acquaint the students with consumer and consumer movement.
2) To make the students aware about consumer rights, duties and mechanism for resolving their Disputes.
3) To make students aware about role of united nations and consumers' associations in protection of Consumers.
4) To make the students aware about laws relating to consumers.
5) To acquaint the students with role of Business Ethics in various functional areas.

Sem II

122 FinancialAccounting:

1. To impart knowledge of various software used in accounting
2. To impart knowledge about final accounts of charitable trusts
3. To impart knowledge about valuation of intangible assets
4. To impart knowledge about accounting for leases.

123 Business Economics (Micro)

1. To understand the basic concepts of micro economics.
2. To understand the tools and theories of economics for solving the problem of decision making by consumers and producers.
3. To understand the problem of scarcity and choices.

125 – a. Organizational Skill Development.

1. To imbibe among the students the qualities of a good manager and develop the necessary skill sets
2. To develop the technical skills of the students to keep up with the technological advancements and digitalization
3. To develop the communication skills of students and introducing them to the latest tools in communication
4. To develop writing, presentation, interpersonal skills of the students for effective formal corporate reporting.
5. To educate the students on the recent trends in communication technology and tools of office automation

125 – b. Banking and Finance [Fundamentals of Banking]

1. To develop the working capability of students in banking sector
2. To Make the Students aware of Banking Business and practices.
3. To enlighten the students regarding the new concepts introduced in the banking system

126 – c. Marketing and Salesmanship [Fundamentals of Marketing]

1. To introduce the concept of Salesmanship.
2. To give insight about various techniques required for the salesman.
3. To inculcate the importance of Rural Marketing.
4. To acquaint the students with recent trends in marketing and social media marketing

126 – d. Consumer Protection and Business Ethics

1. To enhance students' general awareness of ethical dilemmas at work.
2. To understand differing perceptions of interests in business-related situations

3. To introduce the concept of Corporate Social Responsibility, corporate Governance and explore its relevance to ethical business activity
4. To examine whether ethics set any boundaries on Accounting, marketing, IT, Social Media and workplace.
5. To prepare students to play a constructive role in improving the sustainable development with which they may become involved.

S.Y. B.Com. (Credit pattern 2019)
Sem III

231. Business Communication.

1. To understand the concept, process and importance of communication.
2. To develop awareness regarding new trends in business communication.
3. To provide knowledge of various media of communication.
4. To develop business communication skills through the application and exercises.

232. Corporate Accounting

1. To make aware the students about the conceptual aspect of corporate accounting
2. To enable the students to develop skills for Computerized Accounting
3. To enable the students to develop skills about accounting standards

233. Business Economics (Macro)

1. The objective of the course is to familiarize the students the basic concept of Macro Economics and Application.
2. To Study the behaviour of the economy as a whole.
3. To Study the relationship among broad aggregates.
4. To apply economic reasoning to problems of the economy.

234. Business Management

1. To provide basic knowledge & understanding about business management concept.
2. To provide an understanding about various functions of management.

235. Elements of Company Law.

1) To impart students with the knowledge of fundamentals of Company Law.
2) To update the knowledge of provisions of the Companies Act of 2013.
3) To apprise the students of new concepts involving in company law regime.
4) To acquaint the students with the duties and responsibilities of Key Managerial Personnel.
5) To impart students the provisions and procedures under company law.

236 Special papers

c. Business law & Practice I

1) To impart students with the knowledge of Business Law
2) To apprise the students of new concepts involving in Business Law regime.
3) To Impart students the provision and procedure under company

4) To update knowledge of provision ,rules, and regulation

b. Banking & Finance I

1) To evaluate the student and knowledge impart of the banking sector
2) To know the importance of RBI and it guidelines
3) To seek opportunities in the banking sector

e. Cost & works Accounting I

1) To study the cost accounting and its practical implication in the business world
2) To know the standard in the costing and the use in the manufacturing Concern
3) To formulate plans for the smooth work of the manufacturing concern
4) To enhance the skill of the student in the costing modules

Sem IV

241. Business Communication.

1. To understand the concept, process and importance of communication.
2. To acquire and develop good communication skills requisite for business correspondence.
3. To develop awareness regarding new trends in business communication.
4. To provide knowledge of various media of communication.
5. To develop business communication skills through the application and exercises.

242. Corporate Accounting

1. To acquaint the student with knowledge of corporate policies of investment for expansion and growth through purchase of stake in or absorption of smaller units.
2. To develop the knowledge among the student about consolidation of financial statement with the process of holding.
3. To update the students with knowledge of the process of liquidation of a company
4. To introduce the students with the recent trends in the field of accountancy

243. Business Economics (Macro)

1. To familiarize the students to the basic theories and concepts of Macro Economics and their application.
2. To understand the theories of money.
3. To understand the phases of trade cycle and policy measures to elongate the trade cycle.
4. To understand various concepts related to public finance.
5. To understand credit creation of banks and money measures of RBI.

244. Business Management

1. To provide basic knowledge & understanding about business management concept.
2. To provide an understanding about various functions of management.

245. Elements of Company Law.

1. To develop general awareness among the students about management of company

2. To have a comprehensive understanding about Key managerial Personnel of company and their role in Company administration.
3. To acquaint the students about E Governance and E Filling under the Companies Act, 2013.
4. To equip the students about the various meetings of Companies and their importance.
5. To make students capable of becoming good human resource of the corporate sector

246 Special papers

c. Business law & Practice I

1. To impart the students with the fundamental understanding of important Industrial and Labour laws.
2. To study & acquaint students an application & overview based knowledge of Industrial and Labour Laws.
4. To familiar the students with legal Business Environment of India.
4. To develop & strengthen students through the legal practical knowledge and their implications on Indian Business organizations.

b. Banking & Finance I

1.To provide the knowledge of Cooperative Banking in India
2.To analyze the functioning of Development Banking
3.To create the awareness about Banking Sector Reforms
4. To understand the role of various committees on Banking Sector Reforms

e. Cost & works Accounting I

1. To know the documents that are used in stores and how to calculate the issuing price of material.
2. To provide knowledge to students on classification and codification.
3. To equip students with knowledge regarding the ascertainment of labour cost. 4. To understand the concept of payroll.
5. To know the concepts of labour turnover and merit rating.
6. To understand recent trends in cost accounting.

T.Y.B.Com (2019 pattern)

Sem V

351 - Business Regulatory Framework

a. To provide conceptual knowledge about the framework of business Law in India.
b. To orient the students about the legal aspect of business.
c. To create awareness among the students about legal environment relating to the Contract Law, Partnership Act, Sale of Goods Act in India.
d. To understand the emerging issues relating to e-commerce, e-transaction issues and E Contracts

352- ADVANCED ACCOUNTING

a. To acquaint the student with knowledge about various concepts, objectives, and applicability of some important accounting standards.
b. To develop the knowledge among the students about reorganization of business regarding restructuring the capital.
c. To update the students with knowledge for preparation of final accounts of a Banking Companies with the provisions of Banking Regulation Act 1949.

d. To empower to students with skills to prepare the investment account in simple and summarized manner.

353- Indian & Global Economic Development

a. Students will be able to understand present Economic Scenario of Indian Economy as well as World Economy.
b. Students will be able to understand the various aspects of development in Agricultural, Industrial and service sector in India.
c. Student will be able to critically evaluate the role of India in international economy.
d. Students will be able to evaluate the working of international financial organization and institutions.

354- Auditing& Taxation

a. To acquaint themselves about the Definition, Nature, Objectives and Advantages of Auditing, Types of Audit, Errors and Fraud, Audit Program, Notebook, Working Paper, Internal Control, Check.
b. To get knowledge about concept of Checking, Vouching, Verification and Valuation, Types of Audit Report and Auditing Assurance Standard.
c. To understand the provision related Qualification, Disqualification, Appointment, Removal, Rights ,Duties and Liability of Company Auditor and Provisions regarding Tax Audit as per Income Tax Act 1961 (Section 44 AA to 44AE).
d. To know the various new concepts in computerized system and Forensic Audit.

355- Special Paper II

b. Banking and Finance-Special Paper II

a. To acquaint the students with Indian Financial System and its various segments.
b. To make the students aware about Indian Money Market.
c. To analyse and understand the functions of Indian Capital Market.
d. To enable the students the functioning of Foreign Exchange Market.

c. BUSINESS LAWS AND PRACTICE PAPER II

a. To develop an understanding of the significant provision of selective Business & labour Laws.
b. To acquaint the students to address a basic business legal application-oriented issues.

a. .

e. Cost and Works Accounting. Special Paper II

a. To provide knowledge about the concepts and principles of overheads.
b. To introduce the cost accounting standards and the cost accounting standard board.
c. To understand the stages involved in the accounting of overheads.

d. To build an ability towards strategic overhead accounting under Activity Based Costing

356- Special Paper III

b. Banking and Finance-Special Paper III

a. To familiarize the Banking Laws and Practice in correlation to the Banking System in India.
b. To understand the legal aspects of Banking transactions and its implication as a Banker and as a customer.
c. To familiarize the students with the Banking Laws and Practices in India.
d. To make students capable of understanding and applying the legal and practical aspects of banking to help them technically sound in banking parlance.

c. BUSINESS LAWS AND PRACTICE PAPER III

a. To impart the students with the fundamental understanding of rules & regulations under various business laws.
b. To study & acquaint students an application & overview based knowledge of Laws.
c. To make the students aware about legal Business Environment of India

e. Cost and Works Accounting Special Paper III

a. To prepare learners to understand the basic techniques in Cost Accounting
b. To understand the learner, application of Cost Accounting techniques in cost control and decision making.
c. To enable the learners to prepare various types of Budgets.
d. To learn the basic concept of Uniform Costing and Inter-firm comparison
e. To enhance the knowledge of students about MIS and Supply Chain Management

SEM VI

361 - Business Regulatory Framework

1. To develop general awareness of Business Law among the students.
2. To understand the various statutes containing regulatory mechanism of business and its relevant provisions including different types of partnerships.
3. To have a understanding about the landmark cases/decisions having impact on business laws

362- Advanced Accounting

1. To instill the knowledge about accounting procedures, methods and techniques.
2. To impart students' knowledge of various Advanced Accounting Concepts.

363- Indian & Global Economic Development

1. To develop ability of students to analyze economic development process of India.
2. To acquaint the students with the knowledge of recent trends in Human Development Index.
3. To acquaint students with the emerging issues in policies of India's foreign trade.
4. To update the students about International institutions and organizations.

364- Auditing& Taxation

1. To understand the basic concepts of Income Tax Act, 1961 and create awareness of direct taxation among the students.
2. To understand the income tax rules and regulations and its provisions.
3. To have a comprehensive knowledge of calculation various types of income.
4. To know the recent changes made by the finance bill (Act) every year and its impact on taxation of person.
5. To acquaint the students on Income tax department portal (ITD), e-filing and e-services mechanism relating to Assesses.

365- Special Paper II

b. Banking and Finance-Special Paper II

1 .To familiarize students about various basic concepts of stock market.
2 .To analyse the types and process of stock trading.
3 .To enable the students to understand the functions and working of Non -Banking Financial Institutions in India .

c. Business Lawsand Practice Paper II

1. To impart the students with the fundamental understanding of rules & regulations under various business laws.
2. To study & acquaint students an application & overview based knowledge of Laws.
3. To make the students aware about legal Business Environment of India.

e. Cost and Works Accounting. Special Paper II

1. To provide knowledge about the various methods of costing.
2. To understand the applications of different methods of costing in manufacturing and service industries.

366- Special Paper III

b.Banking and Finance-Special Paper III

1. To familiarize students about concept and types cybercrimes in banking.
2. To understand the aspects of paying and collecting banker.
3. To analyse the banker and customers relationship.
4. To enable the students to apply the legal and practical aspects of bank advances.

c. Business Laws and Practice Paper Iii

1. To understand the Companies Act, 2013 and its provisions.
2. To develop general awareness among the students about the Company Law.
3. To create awareness among the students about the legal environment relating to the Company Law.
4. To enhance the capacity of learners to seek career opportunities in the Corporate Sector.

e. Cost and Works Accounting Special Paper III

1. To impart knowledge about Standard Costing and Variance Analysis
2. To learn about pricing policy and its implementation.
3. To know the related Cost Accounting Standards and Cost Management practices in specific sectors 4. To provide a conceptual understanding of procedures and Provisions of Cost Audit.

M.com part I &II
Choice Based Credit System

Programme outcomes:

After successful completion of three year degree programme in commerce student should be able to…

PO1 - To equip and train Post Graduate students to accept the challenges of business world by providing opportunities for study and analysis of advanced commercial and business methods and processes.

PO2 - To develop independent logical thinking and facilitate personality development.

PO3 - To equip the students to seek suitable careers in management and entrepreneurship.

PO4 - To acquaint students with significance of research in business.

PO5 - To impart skills regarding methods of data collection and their interpretations.

PO6 -To develop communication and analytical skills among students.

Programme specific outcomes:

PSO1-To understand Transaction Processing Systems, Management Information systems, Decision Support Systems and Executive Support systems

PSO2- Understand the significance of overheads in the total cost of product/service

PSO3- Development effective Strategy formulation and analytical ability and Skills to design Strategic Plan.

PSO4- Understand formats of cost sheets as per Industry Specifications

PSO5- Awareness on Career opportunities in Supply Chain Management

PSO6- Introduction to Alternative Career opportunities

PSO7-Developing understanding on Financial Management**.**

- **Course outcomes:**
  After completion of this courses student should be able to**……**

M.com –I SEM I

101 Management Accounting

1.To enable students to acquire sound Knowledge of concepts, methods and techniques of management accounting

2.To make the students develop competence with their usage in managerial decision making and control.

102 Strategic Management

1. To study the basic concepts of Strategic Management.
2. To study the significance and problems of Management.
3. To study the impact of Business Economy and Growth

103 Advanced Accounting

1.To lay a theoretical foundation of Accounting and Accounting Standards.

2. To gain ability to solve problems relating to Company Accounts, Valuations and special types of situations.

104 Income Tax

1.To gain knowledge of the provisions of Income - tax including Rules

2. To develop ability to calculate taxable Income of 'Individual', 'Hindu Undivided Family' and 'Firm' assesses

113 Production and operation Management

1. To study Principles of production and operations Management

2.TO take knowledge of ISO 9000- ISO 4000

3. To learn TQM system

114 Financial Management

1. To study the role of RBI in Indian Financial system

2.To gain knowledge of Investment Decisions

3.To learn techniques of Financial Analysis

M.com –I SEM II

201 Financial Analysis and Control

1.To enable students to acquire sound knowledge of concepts, methods and techniques of management accounting

202 Industrial Economics

1. To study the basic concepts of Industrial Economics.

2. To study the significance and problems of Industrialization.

3. To study the impact of Industrialization on Indian Economy.

203 Specialized Areas in Accounting

1. To develop competency of students to solve problems relating Special areas in accounting including accounting for Services Sector.

2. To understanding of Financial Reporting Practices.

3. To familiarize the student with procedure of accounting for Taxation.

204 Business Tax Assessment& Planning

1. To provide understanding of Direct Taxes including Rules pertaining thereto and their application to different business situations.

2. To understand principles underlying the Service Tax.

3. To understand basic concepts of VAT, Excise Duty and Customs Duty.

213 Business Ethics and Professional Values

213 Business Ethics and Professional Values

214 Elements of Knowledge Management

1.To understand management tools and change management

2.To understand of organizational culture and climate
3. To learn about team learning

MCOM-II SEM III

301 Business Finance/ Financial System

1.To enable students to acquire sound knowledge of concepts, nature and structure of business finance.

302 Research Methodology forBusiness

1. To acquaint the students with the areas of Business Research Activities.
2. To enhance capabilities of students to conduct the research in the field of business and social sciences
3. To enable students, in developing the most appropriate methodology for their research studies.
4. To make them familiar with the art of usingdifferent research methods and techniques.

303 Advanced Auditing

1.To impart knowledge and develop understanding of methods of auditing and their application

304 Specialized Auditing

1.To impart knowledge and develop understanding of methods of audit in Specialized areas.

313 Human Resource Management

1. To acquaint the students with in-depth knowledge of HRM.
2. To inculcate among students various practices followed by HR managers.
3. To create understanding about recent trends in HRM

314 Organizational Behaviour

1. To make the students understand various concepts of organisation behavior
2. To provide in depth knowledge about process of formation of group behaviour in an organization

M.com –II SEM IV

401 Capital Market and Financial Services

1.To enable students to acquire sound knowledge, concept and structure of capital market and financial services.

402 Industrial Economic Environment

1. To study the basic concepts of Industrial Finance.
2. To study the effects of New Economic Policy.
3. To study the impact of Labor reforms on Industries.

403 Recent Advances in Accounting, Taxation, Taxation and Auditing

1. To up-date the students with latest developments in the Subject
2. To inculcate the habit of referring to various periodicals and publications in the given subject, apart from text books and reference books
3. To develop the ability to read, understand, interpret and Summarize various articles from

413 Recent Advances in Business Administration

1. To familarise the students with the recent advancements in business administration
2. To develop an understanding about tools and their application in the business.

Department of B.B.A (C.A)

Program outcomes for BBA(CA)

After successfully completion of three year degree program in Economics student should be able to,

PO:1 Students will have basic knowledge about computer.

PO:2 Students will have knowledge about recording of transactions and preparation of final accounts.

PO:3 Students will possess problem-solving skills, especially those required to analyse, design and implement solutions involving the use of a computer.

PO:4 Students will familiar with recent trends in management.

PO:5 Students will get ability to apply knowledge of computing and mathematics appropriate to the discipline.

PO:6 Students will get knowledge about different programming languages..

PO:7 Student will get knowledge about Eco friendly software development.

Programme Specific Outcome (PSO):

PSO-1. Student will be able gain skill oriented human resource.
PSO-2. Student will be able gain skill practical skills among students.
PSO-3. Student will be able gain skill to make industry ready resource.
PSO-4 .Student will be able gain skill to bring the spirit of entrepreneurship

Subject Outcomes (CBCS) 2019 Pattern

FYBBA (CA)

101 Business Communications:

1. Understand the concept, process and importance of communication
2. Created awareness among students about Methods and Media of communication

102 Principles of Management

1. Provided the fundamental knowledge about working of business organization.
2. Students familiar with recent trends in management.

Students well acquainted with management process , functions and principles

103 C Languages

1. understanding of basic concept of programming language

104 Data Base Management System

1. students understand basic concepts database

105 Statistics

1. Understand the power of excel spread sheet in computing summary statistics
2. Understand the concept of various measures of central tendency and variation and their importance in business
3. Understand the concept of probability, probability distributions and simulations in business world and decision making.
4.

107 Programming Principal Algorithms

1. Developed Analytical / Logical Thinking and ProblemSolving capabilities.

201 Organizational Behaviour & Human Resource Management

1. Students understand the impact that individual,group & structures have on their behavior within the organizations.
2. Students understand the impact that individual. group & structures have on their behavior within the organizations

202 Financial accounting

1. students acquired sound knowledge of basic concepts of accounting
2. Impart the knowledge about recording of transactions and preparation of final accounts

203 Business Mathematics

1. To understand role and importance of Mathematics in various business situations and while developing soft wares.

2) To develop skills related with basic mathematical technique

204 Relational Database

1. students understand relational database concepts and transaction management concepts in database system
2. Student to write PL/SQL programs that use: procedure, function, package, cursor and trigger.

205 b Technologies HTML-JS-CSS

1.Know & understand concepts of internet programming.
2.Understand how to developed web based applications using PHP.

207(Advance C) Add on

1.To Understanding code organization with complex data type and structures
2.To get more knowledge work with files

SYBBA(CA)

301Digital Marketing

1. Knowledge about using marketing in and as business.
2.Understanding SWOT analysis SEO Optimization

302 Data Structures using C

1. understand different methods of organizing large amounts of data
2. efficiently implement different data structure
3. get more knowledge on C programming language
4.

303 Software Engineering

1.Students understand system concepts and its application in Software development

304PHP

1. Understand how server-side programming works on the web.
2. Using PHP built-in functions and creating custom functions
3. Understanding POST and GET in form submission.
4. How to receive and process form submission data.
5. Read and process data in a MySQL database.

305Big Data

1. 1. To enable learners to develop expert knowledge and analytical skills in current and
2. developing areas of analysis statistics, and machine learning
3. 2. To enable the learner to identify, develop and apply detailed analytical, creative, problem
4. Solving skills.
5. 3. Provide the learner with a comprehensive platform for career development, innovation and further study

307Addon(Environment Awareness)

To provide an opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment

1) To develop conscious towards a cleaner and better managed environment

401 Computer Networking

1. know about computer network Understanding the use of connecting device used in network

402 OOP's using C++

1. Understanding of basic object-oriented concepts and the issues involved in effective class design
2. Student to write C++ programs that use: object-oriented concepts such as information hiding, constructors, destructors, inheritance.

403 erating System

1. know system programming
2. now services provided by operating system
3. know the Scheduling concepts

404Advance PHP

1.To know & understand concepts of internet programming.
2. Understand how server-side programming works on the web.
3. Understanding How to use PHP Framework (Joomla / Druple)

407ADD-ON Adv. Course in Environmental Awareness

1.Understand current concern about our impact on the environment.
2. Recognize the things they do affect the environment.
3. Promote green practices at home and at work.
4. Describe what is being done and what we all can do to help prevent harm to the environment.

TY BBA(CA) Sem VI

CA-501 : Cyber Security

1.Have a good understanding of Cyber Security and the Tools.
2.Identify the different types of Cyber Crimes.
3 Have a good understanding of Cyber laws

4.To develop Cyber forensics awareness. 5. Identify attacks, security policies and credit card frauds in mobile and Wireless Computing Era.

CA-502 : Object Oriented Software Engineering

1.Students will be able to give Design Specifications for Project.
2. Students will acquire Knowledge in Basic Modeling.
3. Students will acquire Project Management Skills.

CA-503: Core Java

1.Able to solve real world problems using OOP techniques.
2. Able to understand the use of abstract classes.
3.Able to solve problems using java collection framework and I/o classes.
4. Able to develop multithreaded applications with synchronization.
5. Able to develop applets for web applications.
6.Able to design GUI based applications

CA-504 : MongoDB

1.Learned to work with MongoDB shell and MongoDB tools.
2 Able to do Schema design, Data modelling and all sorts of CRUD Operations.
3.Learned to optimize query performance.
4. Become capable to analyze the data stored in MongoDB.

504 : Python

1. Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
2. Design and implement a program to solve a real world problem.
3. Design and implement GUI application and how to handle exceptions and files.

CA-507 : Internet of Things (IoT)

1. To explain key technologies, smart objects, IoT Architecture and security in Internet of Things.
2. To illustrate the role of IoT protocols for efficient network communication.
3. To understand IoT platform such as Arduino Uno

: CA-601 : Recent Trends in IT

1.To discuss the basic concepts AI.
2. To apply basic, intermediate and advanced techniques to mine the data. 3. To provide an overview of the concept of Spark programming.

CA-602 : Software Testing

1. Students will be introduced to testing tools.
2. Students will acquire Knowledge of Basic SQA.
3. Students will be able to design basic Test Cases.

CA-603 : Advanced Java

1.Students will know the concepts of JDBC Programming.
2. Students will know the concepts of Multithreading and Socket Programming. 3. Students will know the concepts of Spring and Hibernate.

4. Students will develop the project by using JSP and JDBC.
5. Students will develop applications in Spring and hibernate.

CA-604 : Android Programming

1.Student will be able to write simple GUI applications, use built-in widgets and components, work with the database to store data locally, and much more.
2. Demonstrate their understanding of the fundamentals of Android operating systems Demonstrate their skills of using Android software development tool

CA-604 : Dot Net Framework

1.Use the features of Dot Net Framework along with the features of VB, C# and ASP
2.Design and develop window based and web based .NET applications.
3. Design and develop a Website. 4.Design and Implement database connectivity using ADO.NET for VB, C# and ASP.

CA – 607:Soft Skill

1. Understand the significance and essence of a wide range of soft skills
2. Learn how to apply soft skills in a wide range of routine social and professional settings.
3. Learn how to employ soft skills to improve interpersonal relationships.
4. Learn how to employ soft skills to enhance employability and ensure workplace and career success.

Department of B.B.A

Programme Outcomes

After successful completion of three year degree programme in B.B.A. Student should be able to:

PO-1 To develop managerial skills such as Time management, Career planning, Ability to work as part of a team, communication skills.
PO-2 The new trends in Finance and HR are made aware of to the students

PO-3Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO-4 Awareness of financial planning, income tax and its structure is made familiar to the students.

PO-5.To develop the use of modern technology such as Tally ERP -9.00 and GST and other computer skills such as MS office etc
PO-6.Through Entrepreneurship Development students gain the knowledge to create their own venture.

Program me Specific Outcomes:

Pso-1.Students will be able to gain the knowledge of finance & HR through theory and practical

Pso-2. Students will be able to know the importance of soft skill is well-known to the students.

Pso-3. Students will be able to develop various managerial skills.

Pso-4. Students will be able to acquire the concept of Accounting, finance, HR

Pso-5 students will be able to understand industrial work and field work experience.

Course Outcomes

After completion of this courses student should be able to

T.Y.B.B.A (CBCS 2019 Pattern)

GC 501 Research Methodologies

1. Students are exposed to the areas of commercial and business research activities.
2. To develop an understanding of various Designs, Tools and Techniques of Research Study.

GC 502 Database Administrations and Data Mining

1. Students can to understand the Database Management System
2. To understand the current trends in Data Management

GC 503Business Ethics

1. Students can understand Business Ethics.
2. Students can understand various Business Ethics practices.
3. Student can understand modern Business Ethics and give their understanding residing applications in different context.

GC 504 Management of Corporate Social Responsibility

1. Students can understand the concept and process of CSR
2. Students can understand the industrial contribution for CSR Policy
3. To understand the context of CSR of present-day Management

DSE 505 FM Finance Special Paper I Analysis of Financial Statements.

1. Students study various financial statements of corporate organizations.
2. Student are well acquainted with current financial practices

DSE 505 Human Resource Management Special Paper I Cross-Cultural HR & Industrial Relations

1. To make students understand Cultural Variables in Multinational Enterprises.
2. To make students understand the relationship between Cross-Culture Management and Human Resource Management.
3. Students understand the concept, principles & practices of H.R.M.

DSE 506 FM Finance Special Paper II Legal Aspects of Finance & Security Laws

1. Students are acquainted regarding current financial structure.
2. Students can understand the Legal Aspects of Finance & Security Laws.
3. Students can came to know the legal provisions to obtain finance from various source

DSE 506 Human Resource Management Special Paper II Cases in Human Resources Management + Project Viva

1 Students are familiar with HRM and its practices
2 . Students can develop critical thinking for solving Case Studies of Human Resource.

GC 601 Essentials of E-Commerce

1. Students know the concept of electronic commerce
2. Students know what is Internet and Extranet
3. Students know Internet marketing techniques
4. Students can understand the concept of Cyber Space and Cyber Security in E-Commerce.

GC 602 Management Information System

1. Students are introduced with the function of management control, its nature functional areas, and techniques.
2. Students can understand to describe the basic concept of Information Technology and Management Information System.

GC 603 Business Project Management

a. Students can develop a concept based approach towards Management of Business Projects.
b. Students can develop the relationship between the significance of Businesses Projects & their Management.

GC 604 Management of Innovations and Sustainability

1. Students can understand the concepts of Innovation and Sustainability in a practical sense.
2. Students can learn about the most common errors made when handling sustainable growth.

DSE 605 FM Finance Special Paper III Financial Management

Students studied various financial services in India.

1. Students are well acquainted regarding financial market.
2. Students can study and understand the capital structure of the company and its cost of capital
3. Students can study optimum capital mix & concept of over capitalization& undercapitalization.

DSE 605 C Human Resource Management Special Paper III.
International Human Resource Management

1. Students can learn how to conduct strategic human resource management in an international setting.
2. Students can understand the concepts, theoretical framework, and issues of HRM in Global Perspective.
3. Students can be identify and Understand issues and practices about the major HRM functions Within the context of the global environment.

DSE 606 B FM Finance Special Paper IV Cases in Finance +Project

1. Students can study the practical applications of finance.
2. Students can prepare project reports based on the internship & understanding of core areas of finance.

DSE 605 C Human Resource Management Special Paper IV
Recent Trends & HR Accounting + Project

1. Students can describe various Employee Engagement Strategies to enhance Employee Engagement.
3. Students can come to know the uses of Human Resource Information Systems in organizations.
4. Students can understand the different methods used to calculate the value of human Resources.
5. Students can get deep knowledge of Human Resource Audit and outline its scope

S.Y.B.B.A (CBCS-2019 Pattern)

301 Principles of Human Resource Management

1. Students are acquainted with the Human Resource Management its different functions in an organization and the Human Resource Processes that are concerned with planning, motivating and developing suitable employees for the benefit of the organization

302 Supply Chain Management

1. Students understand basic legal terms and concepts used in Supply Chain Management.
2. Students are familiar with the issues in core functions in materials and logistics management

303 Global Competencies and Personality Development

1. Students are aware about dimensions of personality.
2. Students understand personality traits and its application in corporate sector development

304 Fundamentals of Rural Development

1. Students understand basic knowledge of development issues related to the rural society
2. Students can understand the importance of employment for rural youth and create interest among rural youth to participate in rural development programme.

B 305 FM Management Accounting

1. Student understand basic knowledge of management accounting
2. Students understand application and use of various tools of management accounting in business.

B 306 FM Banking And Finance

1. Student can understand recent technology in banking industry.
2. Student can understand banking functions and its operations.

C -305 HRM- Organisation Behaviour

1. Students can describe the major theories, concepts, models and frameworks in the field of Organizational Behavior.
2. Students can explain determinants of Organizational Behavior at Individual, Group and Organizational Level.

C 306 (HRM) Legal Aspects in Human Resources

1.Students study and explain rights of employees at work place.
2.Students understand the Applications of different Legal Aspects in HR.

307 (M)Basic Course in Environmental Awareness

1. Students understand values for better social and personal life**.**
2. Students can develop conscious towards a cleaner and better managed environment
3. Students can understand the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment

401 Entrepreneurship and small Business Management

1. Students are aware of entrepreneurship..
2. Students develop their entrepreneurial competence.

3. Students develop knowledge and understand, create and manage new Venture

402 Production & Operations Management

1. Students understand the industry and the process of production.
2. Student understand various manufacturing method and roll in managing business.

403 Decision Making and Risk Management

1. Students develop an understanding of Decision making.
2. Students understand the knowledge of risk Management.

404 International Business Management

1. Students are acquainted with emerging issues in international business
2. Students studied the impact of international business environment on foreign market operations of a firm.

B 405 FM Business Taxation

1. Students understand the basic concepts and definitions under the Income Tax Act, 1961.
2. Students acquired knowledge about Computation of Income under different heads of Income of Income Tax Act,1961
3. Students acquired knowledge about the submission of Income Tax Return, Advance Tax, Tax deducted at Source, Tax Collection Authorities
4. Students are competent enough to take up to employment as a Tax planner.

B406 FM Financial Services (plus computer Course)

1. Students understand financial services in India
2. Students understand working of Indian financial system.

405 –C-HRM Human Resource Management Functions& Practices

1. Students acquire comprehensive Knowledge of Human Resource Management Functions & Practices.
2. Students can explain the methods of Performance Appraisal, Training, Executive Development and Employee Compensation.

406 C- HRM Employee Recruitment & Record Management

1. Students study and explain employee acquisition and its importance in industry.
2. Students cultivate right approach towards employee recruitment and record management.

407 G International Etiquettes & Mannerisms

1. Student can overcome the cross cultural barriers.
2. Students understand about professional skills required in Global corporate world.

F.Y.B.B.A

101 Principles of Management

1. Student understand basic concept regarding organizing business administration
2. Student can develop managerial skills.

102 Business Communication Skills

1. Students understand the concept, process and importance of communication.
2. Students gain knowledge of media of communication.
3. Students develop skills of effective communication - both written and oral.
4. Students are acquainted with application of communication skills in the business world

103 Business Accounting

1. Student cultivate right approach towards classification of different transactions and their implications.
2. Student understand how to Wright basic accounting information.

104 Business Economics (Micro)

1. Students understand basic micro economic concepts.
2. Students apply economic analysis in the formulation of business policies.
3. Students use economic reasoning to problems of business.

105 Business Mathematics

1. Students understand the concepts of ratio, proportion and percentage.
2. Students understand the concept and application of profit and loss in
3. Students use the concept of EMI.
4. Students understand the concept of stock exchange and to calculate Dividend
5. Students understand applications of matrices in business.

106 Business Demography.

1. Students develop knowledge base for demographic and environmental factors affecting business
2. Students are aware of environmental problems related to Business and Commerce
3. Students inculcate values of Environmental ethics.

107 B Communication Skills for Managers

1. Students develop communication skills in professional manner.
2. Students improve vocabulary and common errors.

201 Business Organizations and System

1. Students understand role and functions of modern business.
2. Students develop right understanding regarding business environment.

202Principles of Marketing

1. Students study & critically analyze the basic concepts in marketing.
2. Students develop new understanding regarding services, rural marketing and new trends in marketing.

203 Principles of Finance

1. Students understand the nature, importance, structure of finance related areas and knowledge regarding source of finance for a business.
2. Students cultivate right approach towards money finance and their role in business.

204 Basics of Cost Accounting

1. Students understand the Basic cost concepts, element of cost & preparation of cost sheet
2. Students understand important Methods & Techniques of costing

205 Business Statistics

1. Students understand the concept of population and sample.
3. Students use frequency distribution to make decision.
4. Students understand and to calculate various types of averages and variation

5. Students use regression analysis to estimate the relationship between two variables
6. Students solve LPP to maximize the profit and to minimize the cost.
7. Students solve TP to maximize the profit and to minimize the cost.

206 Fundamentals of Computers

1. Students know the Fundamentals of Computers
2. Students understand how to use Computer applications in day to day application.

207 F Personalities and soft skill development (Add on Course)

1. Student develop fluency in expressions and speech
2. Student develop corporate etiquettes in various corporate engagement

***Democracy, Election & Governance (for 2 Credits)**