Program Outcomes for B.A Courses

1) Arabic and Islamic Studies

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme:	Outcome
FYBA Arabic Compulsory	✓ To give students basic knowledge of Arabic Language ✓ To teach them reading and writing Arabic ✓ To acquaint them with Modern Arabic (Prose & Poetry)
FYBA Arabic Optional	✓ To acquaint students with Arabic Language (Reading, writing, comprehension) ✓ To teach students the History of Arabic Language ✓ To teach them Modern Arabic Language ✓ To hone their writing skills
SYBA Arabic	✓ To teach students comprehension at an advanced level ✓ To teach students to read and comprehend Arabic by themselves ✓ To sharpen their writing skills up
TYBA Arabic	✓ To make students able to comprehend the language ✓ To make students able to translate the language ✓ To teach them Arabic on a vast level ✓ To make them able to listen, understand and speak Arabic
FYBA Islamic Studies	✓ To provide students with the basic knowledge of Islam ✓ To acquaint them with various aspects of Islamic History
SYBA Islamic Studies	✓ To acquaint students with an advanced level of knowledge about Islamic Studies ✓ To create in them curiosity to acquire more and more knowledge about the subject
TYBA Islamic Studies	✓ To introduce the subject at a vast level ✓ Inspire them for research on the topics taught by the teacher ✓ To hone their listening, comprehending and explaining skills

2) Economics

) Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
FYBA PaperI & IIMicro economics	✓ To make students understand the principles of Microeconomics ✓ To acquaint students with basic mathematical tools in comprehending economic data. ✓ To illustrate the percepts in framing economic policies.
SYBA paper IIIMicro economics	✓ To evaluate the students to understand the theories and concepts of utility analysis, production analysis cost and revenue and competitive markets
SYBA paper IV Macro economics	✓ To build understanding of basic macroeconomic identity. ✓ To enable students to understand how ROI and Income lend are determined in a closed economy and how policy may affect these outcomes.
SYBA paper V Indian Economy	✓ To familiarize students with the dynamics of Indian economy. ✓ To expose them to the application of economic concepts to Indian economy.
SYBA paper VI Development issues of Maharashtra's Economy.	✓ To introduce students to development issues of economy of Maharashtra. ✓ To analyze the Mcom mediations and strategies devised to address the issues.
TYBA paper XVI research methodology	✓ To strengthen the critical thinking and listening skills in conducting economic research and to device research outcomes in an impeccable way.
TYBA paper XV Economics of agriculture and cooperation	✓ To provide various aspects related to the principles of cooperation and cooperative organization in the globalized economy.
TYBA paper XVI Research Methodology	✓ To strengthen the critical thinking and listening skills in conducting economic research and to device research outcomes in an impeccable way. ✓ To help students evaluate demographic concepts and their evolution during the process of development. ✓ To enable the students understand the theory of migration and discuss link between migration and development. ✓ To discuss issues related to environment and development.

Master in Business Economics (Part 1) **Microeconomics**	1. Understand the fundamental concepts of microeconomics, including demand, supply, and market equilibrium. 2. Analyze consumer behavior using utility and indifference curve theories. 3. Evaluate firm behavior through the theory of production and cost. 4. Examine different market structures such as perfect competition, monopoly, oligopoly, and monopolistic competition. 5. Apply game theory to understand strategic decision-making. 6. Assess the impact of government interventions like taxation, subsidies, and price controls on markets.
Master in Business Economics (Part 1) **Economics of Banking**	1. Understand the structure and functioning of the banking system in India and globally. 2. Analyze the role of central banks in monetary policy and financial regulation. 3. Evaluate risk management practices in banking, including credit, market, and operational risks. 4. Understand the significance of financial inclusion and the role of technology in modern banking (e.g., fintech). 5. Analyze key concepts like interest rate determination, non-performing assets (NPAs), and Basel norms. 6. Explore the relationship between banking practices and macroeconomic stability.
Master in Business Economics (Part 1) **Economics of Insurance**	1. Understand the basic principles and types of insurance, including life, health, and general insurance. 2. Analyze the role of insurance in managing individual and organizational risks. 3. Evaluate the structure and regulatory framework governing insurance markets in India. 4. Assess the impact of economic policies on the insurance sector. 5. Understand the role of actuarial science in determining insurance pricing and risk assessment. 6. Explore innovations in the insurance industry, such as digital insurance and micro-insurance models.
Master in Business Economics (Part 1) **Economics of Agriculture**	1. Understand the economic significance of agriculture in India and its contribution to GDP and employment. 2. Analyze the principles of agricultural production, resource allocation, and productivity. 3. Evaluate agricultural marketing systems, including supply chains, pricing mechanisms, and the role of cooperatives. 4. Assess the impact of government policies on agriculture, including subsidies, minimum support prices (MSPs), and credit facilities.

	5. Examine issues like food security, rural development, and sustainable agricultural practices. 6. Understand the impact of globalization and trade policies on Indian agriculture.
Master in Business Economics (Part 1) **Research Methodology**	1. Understand the fundamentals of research, including problem identification, hypothesis formulation, and research design. 2. Develop proficiency in data collection methods (primary and secondary) and sampling techniques. 3. Apply statistical tools and software for data analysis and interpretation. 4. Understand ethical considerations in research, including plagiarism and data integrity. 5. Prepare structured research reports and academic papers with proper referencing. 6. Conduct independent research projects and communicate findings effectively to academic and professional audiences.

3) English Literature

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
FYBA/ COMM SKILLS	1. The learners will learn to understand and interpret any text they are reading from different perspectives 2. The interest of learners in listening to and watching good quality audio and visual media will be aroused. 3. Learners will acquire proficiency in the skills of listening, speaking, reading and writing that will help them meet the challenges of the world. 4. The learners will develop good oral and written skills of communication in the English language.
FYBA/ ENGLISH LITERATURE	1. To develop passion for reading literary works amongst students 2. To make learners at ease in the process of appreciation of literature 3. To enable learners to understand and analyze selected stories, prose, fiction and non-fiction masterpieces 4. To imbibe the underlying philosophy and values reflected in literature. 5. To develop sensitivity to nature and understand the relationship between human beings and environment.
FYBCOM/ BUS COMM	1. To use the case study approach to understand and address issues in the business world where communication is used effectively.
SYBA/ MASS COMM	1. To understand the impact of Mass communication on people and define Censorship in the use of different media.
SYBA/ ENGLISH LITERATURE	1. To expand critical thinking and to enable textual analysis both in Indian Writing in English and American Literature. 2.To understand different perspectives on politics and control.
TYBA/ENGLISH LITERATURE	1. To introduce to students the major trends and ideas in the literature and culture from the Renaissance to the Modern Era in Britain. 2. To sensitize students to diverse sensibilities and humanitarian concerns through literature from 16th Century to 20th Century. 3. To familiarize students with the tenets of Practical Criticism. 4. To introduce the mechanics of writing for effective writing for various domain.

MA ENGLISH – I Paper-I PAENG101 English Poetry from Chaucer to the Present	• Demonstrate their knowledge about the style of writing of the poets that prevailed during the particular age which they represent • Engage critically with a range of poets' writing and would be able to analyze and interpret poetry in a wider context • Enhance sensitivity towards life • Contextualize the text and develop an appreciation of other cultures and ways of life.
MA ENGLISH – I Paper-II PAENG102 English Non-Fictional Prose from Bacon to the Present	At the end of the course the reader will • be well-versed with English non-fictional prose writings of a vast period of four centuries • have developed a critical eye for any prose writing and will be able to analyze and interpret various forms of prose writing • have cultivated a deep respect for cultures after having scrutinized various kinds of texts • develop an enhanced and more balanced view of life having been exposed to prose writing from different spheres
MA ENGLISH – I Paper-III PAENG103 Literary Criticism	• The student will develop an awareness of the chronological evolution of literary theory • The student will be provided with a starting point into literary theory to further advance in exploring literary theories. • The student will acquire an understanding of literary theory which will aid in better interpreting literary texts.
MA ENGLISH – I Paper-IV PAENG104 Language: Basic Concepts and Theories	Having successfully completed this course, the learner will: 1. Be able to explore the link between linguistics and the language 2. Be able to identify various levels of structural organization of language 3. Demonstrate an exploratory understanding of the origin and the development of English language 4. Display familiarity with the basic concepts in the study of language 5. Show an introductory understanding of the major theories of human language
MA ENGLISH – I Paper-V PAENG201 English Drama from Shakespeare to the Present	On completion of the course the learner will be able to demonstrate abilities to appreciate and critically evaluate English Drama.

MA ENGLISH – I Paper-VI PAENG202 English Fiction from Defoe to the Present	By the end of the course, the learners will be able to 1. Demonstrate their knowledge about the style of writing of the novelists that prevailed during the particular age which they represent. 2. Engage critically with a range of novelists' writings and would be able to analyze and interpret any given novel in a wider context. 3. Enhance sensitivity towards life. 4. Contextualize the text and develop appreciation of other cultures and ways of life
MA ENGLISH – I Paper-VII PAENG203 Literary Theory: Post World War II	1) The learners will develop an awareness of the varied critical methods and literary theories. 2) They will be able to analyse, interpret and criticize literary texts. 3) They will be able to apply the varied critical approaches and literary theories in exploring the multiple viewpoints of the literary texts. 4) They will become aware of the trends and cross-disciplinary nature of literary theories. 5) They will become acquainted with the conventions of writing research papers.
MA ENGLISH – I Paper-VIII PAENG204 English in Use and Usage	Having successfully completed this module, the learner will: 1. Demonstrate an understanding of English language with a sociolinguistic perspective 2. Understand how the meaning of language is shaped in its interactional context. 3. Show a critical understanding of the native and non-native varieties of English 4. Be able appropriate the English use in varied contexts with a historical perspective of English in India.
MA ENGLISH – II Paper- IX A PAENG 301 Indian Literature in English	After Completion of the course the learners will be able to: • understand the thematic concerns of Indian Literature in English. • analyse Indian Literature in English in various ways. • understand Indian society and issues. • find various research topics in Indian literature in English.

MA ENGLISH – II Paper- X A PAENG 302 American Literature	1. Understand key concepts represented in American Literature 2. Critically examine the impact of Movements on literature 3. Appreciate contemporary themes and styles reflected in the works of representative American Writers. 4. Identify universal co-relation between Humanity and Nature found in the realm of American Literature 5. Evaluate the distinguishing tenets of American literature.
MA ENGLISH – II Paper- XI A PAELT303 English Language Teaching (ELT)	1. Apply the various theories in diverse language teaching-learning situations 2. Choose judiciously among conventional and ICT-based techniques to suit learning contexts. 3. Demonstrate LSRW skill building strategies. 4. Select and design teaching materials 5. Map assessment tools and learning outcomes.
MA ENGLISH – II Paper- XII A PAENG304 New Literatures in English	At the end of the course, the learner will: • be conversant with Literatures in English from the former settler colonies and colonies of occupation. • be able to identify the major themes and concerns of the literatures in English. • be able to contextualise a text from the settler colonies and colonies of occupation in context of cultural imperialism, appropriation of voices of ethnic minorities and indigenous communities and the retaliation of these communities to that appropriation. • be able to appreciate the ethnic and cultural literary forms that inform the literary expressions of the minority communities. • be equipped with the tools to carry out independent research on African, Caribbean, Canadian and Australian literature.
MA ENGLISH – II Paper- XIII A PAENG305 Pandemic Literature	After studying pandemic literature, the students will be… • Introduced to different pandemic literary terms, genres, ages, and times of pandemic literature. • Aware of different conditions and situations of pandemics. • Ready to face the challenges and problems created by the pandemics • Taught to face the conditions created by the pandemic challenges

MA ENGLISH – II Paper- XIV C PAENG306 Research Methodology in Language and Literature	By the end of the course, the learners will be able to 1. Demonstrate their knowledge about the terminologies associated with research activity 2. Analyze linguistic/generic aspects of a research paper 3. Use relevant critical concepts and theory in order to effectively analyze and evaluate literary texts 4. Select study material, review and develop theoretical and conceptual frameworks for their research 5. Write a research proposal/paper independently
MA ENGLISH – II Paper- XV D PAENG307 Environmental Studies	After completing the course, the learner will be able to: ● Think rationally and critically, having gained an interdisciplinary perspective on environmental sustainability and how it can be achieved and maintained ● Understand the theoretical trends, concepts and environmental movements that have impacted the world ● Apply the ideas and lessons learnt by developed countries to the situation in India. ● Analyse literary works that advocate environmental sustainability using globally recognized theoretical tools and paradigms
MA ENGLISH – II XVI Project Based Courses	The students will learn to critically evaluate and interpret any work of literature.

4) History

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
• F.Y.B.A. SEM I and II Paper I History of Modern India • S.Y.B.A. SEM III and IV Paper II Landmarks in World History Paper III Ancient India • T.Y.B.A. SEM V Paper IV Medieval India –from 1000 A.D. to 1526 A.D. Paper V History of Modern Maharashtra 1818A.D. to 1960 A.D. Paper VI Introduction to archaeology • T.Y.B.A. SEM VI Paper IV Mediaval India from 1526 A.D. to 1707 A.D. Paper V Contemporary India 1947 A.D. to 1960 A.D. Paper VI Museology and Archival Science	✓ Impart knowledge of basic concepts and modern trends in History ✓ Foster interest in History subject ✓ Students learn to apply historical methods to evaluate critically the record of the past and how historians and others have interpreted it. ✓ Students acquire basic historical research skill, the effective use of libraries and archives

5) Political Science

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
Semester I	To introduce the students to the Indian constitution, legislature, judiciary and executive structure.
Semester II	To introduce the students to the nature of federal system party politics and elections and challenges to national security.
Semester III	To acquaint the students with principles and concepts of political theory.
Semester IV	To introduce the students to various political values and ideologies
Semester V	To introduce the students to the writings on hegemony, feminism and multiculturalism.
Semester VI	To provide insight into Indian political thought.

6) Sociology

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	**Outcome**
Foundations ofSociology Paper I	To introduce the students to the basic concepts in Sociology. To familiarize students with the theoretical aspects of different concepts.
Fundamentals of Sociology PaperI	To introduce the students to the emerging issues in Sociology. To enthuse students and to introduce them to the relevance and varied possibilities for future studies in Sociology.
Paper II Indian Society: Structure and Change	To introduce students to the Indian Sociological Traditions. To familiarize students with the Research traditions in Indian Sociology. To acquaint students with the emerging issues in Indian Society.
Paper II Sociology of Development	To introduce various theoretical perspectives in Indian society that have shaped the concept of development. To help students to gain an insight into emerging issues and contemporary debates within the development discourse.
Paper IIIContemporary issues in Indian Society.	To bring awareness and sensitivity among the students towards contemporary issues. To inculcate responsibilities and promote equality.
Paper IIIEmerging fields in Sociology.	To introduce students to the relevance and varied possibilities for future studies in sociology. It make's students aware about the new vibrant fields in sociology. To provide students with an in-depth understanding of struggle and survival in today's competitive scenario.
(Applied Component) Market research	The course aims at introducing the students to the nature of marketing research and its uses. Since the focus is on techniques, it is expected that the students have an exposure to construction of simple questionnaire and conducting of simple survey interviews. Students are expected to undertake a project involving its formulation and data collection. Case studies are to

	be used in teaching.
(Applied Component) Demography	The modules incorporated in this paper educate the students about the inter-relationship between economic development and population along with an exposition of the established theories of population. Issues related to demographic techniques and basic sources of demographic data in the Indian economy have also included. Aspects of the population policy and the study of its social characteristics are other important components of the modules of this paper.
PaperIV Theoretical Sociology	a) Understanding of Sociological Theory. b) To train students in the application of these theories to social situations.
PaperIV Anthropological Thought	a) Understanding of theoretical anthropology. b) To train students in the application of these theories to social situations.
Paper V Sociology Of Work	a) To introduce students to the area of industrial sociology b) To help students to develop sociological understanding of the changes taking place in the area
Paper V Sociology Of Informal Sector	a) To develop a sociological understanding of the issues related to the informal sector. b) To introduce students to the growing sector of informal workers in the Indian economy c) To introduce students to the understanding of issues related with the informal sector in the context of globalization. d) To engage students with current debates on outsourcing, downsizing, social clause, social security and role of ict
Paper VI Sociology Of Gender	a) To trace the evolution of Gender as a category of social analysis. b) To trace the emergence of women's movement in India and the history of their struggles
Paper VI Gender And Society In India: Contemporary Debates And Emerging Issues	a) To understand new and emerging issues in the Indian feminist landscape b) To understand newer methods of protest and resistance

Paper VIISociology Of Human Resource Development	a) To familiarize the students with role and functions of human resource development at the micro and macro level. b) To create an awareness of the various issues involved in the development of human resources with particular emphasis on social and cultural factors.
Paper VII Sociology Of Organizations	a) To familiarize students with dynamics of organizations and diverse strategies useful in developing human resources. b) To create an understanding of human resource planning to social development and comprehend the challenges faced by organizations in a global context.
Paper VIII Urban Sociology	a) To introduce students to the basic concepts, theories, nature & dynamics of urbanization in India b) To understand the trends of India'scontemporary urbanization pattern
Paper VIII UrbanisationIn India: Issues And Concerns	a) To understand urban development in the neo liberal era. b) To understand newly emerging issues and concerns in the changing scenario
Paper IX Quantitative Social Research	a) To provide students with an orientation to quantitative social research b) To acquaint students with the important concepts, techniques and methods in the quantitative social research process c) To enable students to apply theoretical knowledge of social research to field study. Students are required to submit a project based on original field study.
Paper IX Qualitative Social Research	a) To provide students with an orientation to qualitative social research b) To acquaint students with the important concepts, techniques and processes in qualitative research c) To enable students to apply theoretical knowledge of social research to field study. Students are required to submit a project based on original data collection.

Urdu

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme:	Outcome
FYBA Urdu Compulsory	✔ The student learns different forms of Urdu Prose & Poetry. ✔ The student appreciates at least one prose writer and one poet in each form of prose and poetry. ✔ The student knows how to write essays on different literary and social topics. ✓ The student writes reports of different literary and cultural programmes. ✓ The student develops healthy attitude towards supplementary reading. ✓ The student memorises a good number of verses and couplets of well known poets
FYBA Urdu Paper I	✔ The student learns one form of Urdu poetry ' Nazm ' and one form of prose ' Afsana ' in detail with their art, techniques and gradual development. ✔ The student appreciates two Nazmgo poets Allama Iqbal and Akhtar Shirani and two Afsanago writers through their selected work. ✔ The student develops skill to critically examine the beauties of a poem and a afsana. ✔ The student understands the social relevance of literature. ✓ The student develops the skill to express his/her creative ideas through Nazm and Afsana.
SYBA Urdu Paper II	✔ The student learns two forms of Urdu Poetry ' Ghazal ' and ' Nazm' in detail with their art, techniques and gradual development. ✓ The student knows the Progressive Movement in Urdu literature and the important writers and poets associated with the same. ✔ The student appreciates two Ghazalgo poets Asghar Gondavi and Faani Badayuni. ✓ The student appreciates two Nazmgo poets Khalilur Rehman Azmi and Akhtarul Iman..

	✓ The student learns the life and literary work of both the poets in detail. ✔ The student develops skill to critically examine the beauties of Ghazal and Nazm. ✔ The student understands the social and political relevance of Urdu poetry. ✓ The student develops the skill to express his/her creative ideas through Nazm and Ghazal.
SYBA Urdu Paper III	✔ The student learns two forms of Urdu Prose ' Letter ' and ' Travelogue' in detail with their art, techniques and gradual development. ✓ The student knows the first war of freedom of 1957 and the importance of Mirza Ghalib in recording the memoirs of the same. ✓ The student knows the Aligarh Movement in Urdu literature and the contribution of Sir Sayyed Ahmed Khan in the field of Education and Reform. ✔ The student learns the art and delicacies of Letters of Ghalib and the importance of Letters of Sir Sayyed in knowing the educational and social development of Muslims of North India in second half of 19th century. ✓ The student appreciates two Travelogue writers Mujtaba Husain and Sughra Mehdi. ✓ The student learns the life and literary work of both the writers in detail. ✔ The student develops skill to critically examine the beauties of any Travelogue. ✔ The student understands the literary , social, cultural and political relevance of Urdu poetry. ✓ The student develops the habit of writing notes while traveling to distant places.
TYBA Urdu Paper IV Essay, Grammar , Translation Rhetoric and Prosody	✔ The student learns in detail the four basic chapters of Urdu Grammar : Ism, Sifat, Zameer and Fael. ✓ The student learns different forms of Urdu Composition and develops skill to express his/her feelings and observations through different forms. ✓ The student learns different meters of Urdu poetry and develops the skill of scanning couplets of particular meters. ✓ The student translates passages from English to Urdu and from Urdu to English

TYBA Urdu Paper V Modern Urdu Literature	✔ The student learns one form of Urdu Poetry ' Nazm' in detail with special reference to Prograssive Movement. The art, techniques, style of writing of different Prograssive Writers and gradual development. ✓ The student knows the Progressive Movement in Urdu literature and the important writers and poets associated with the same. ✔ The student appreciates one Nazgo poet Faiz Ahmed Faiz through his selected work. ✓ The student appreciates one Novel Writer Ismat Chughta'i. ✓ The student learns the life and literary work of Ismat Chughta'i. ✔ The student develops skill to critically examine the beauties of Nazm and Novel. ✔ The student understands the social and political relevance of both the forms of literature. ✓ The student develops the skill to critically examine any Nazm or Novel.
TYBA Urdu Paper VI Urdu Journalism	✔ The student learns the meaning, importance, art and different forms of Journalism. ✔ The student differentiates and learns to write news, editorial, feature and column to a limited extent. ✔ The student learns to prepare a questionnaire for an interview. ✓ The student conducts an interview with a Journalist . ✔ The student develops research skills when completing the projects. ✔ He\she works as an intern in the office of any Urdu Newspaper.

TYBA Urdu Paper VII Classical Urdu Prose	• The student learns two forms of Classical Urdu Prose ' Tamseel ' and ' Dastan' in detail with their art, techniques and gradual development. • The student learns to read texts in Dakani Urdu. • The student knows the development of Urdu language in Deccan. • The student learns the art and delicacies of Tamseel of Mulla Wajhi and the importance of his book Sabras in Urdu Prose. • The student knows the development of Urdu Prose in Fort William College, Kolkata

	• The student learns the art and delicacies of Dastan of Haider Baksh Haidary and the importance of his book Qissa-e-Hatim Tai in Urdu Prose. • The student learns the life and literary work of both the writers in detail. • The student develops skill to critically examine the beauties of Tamseel and Dastan. • The student understands the historical importance of both the Classical forms of Urdu Prose and their role in gradual development of Urdu language. • The student develops the habit of reading and appreciating of classical literature
TYBA Urdu Paper VIII Classical Urdu Poetry	✔ The student learns two forms of Classical Urdu Poetry' Ghazal ' and ' Marsiya' in detail with their art, techniques and gradual development. ✓ The student knows the development of Urdu Ghazal and Marsiya in Deccan, Delhi and Lucknow. ✔ The student learns the art and delicacies of Classical Urdu Ghazal of Delhi and Lucknow . ✔ The student knows the art, delicacies and important poets of Urdu Marsiya in Deccan, Delhi and Lucknow. ✔ The student learns the art and delicacies of Ghazal of Khwaja Meer Dard and Khwaja Haidar Ali Atish. ✓ The student learns the life and literary work of both the Poets in detail. ✔ The student develops skill to critically examine the beauties of Classical Urdu Ghazal and Marsiya. ✔ The student understands the historical importance of both the Classical forms of Urdu Poetry and their role in gradual development of Urdu language. ✓ The student develops the habit of reading and appreciating Classical Urdu Poetry.

TYBA Urdu Paper IX Urdu Stage and Theatre	✔ The student learns art, technique and different forms of Drama, Stage and Theatre . ✓ The student knows the gradual development of Drama in general and Urdu Drama in particular. ✔ The student does detailed study of two playwrights, one classical and another modern, namely Dr. Abid Husain and Zahir Anwar. ✔ The student develops interest in staging plays and learning to act, direct or write plays as per his aptitude.

	✔ The student gets opportunities to attend seminars and workshops on Drama, stage and Theatre. ✓ The student gets the opportunity to work with different drama groups playwrights when completing the project. ✓ The student learns the life and literary work of both the playwrights in detail. ✔ The student develops skill to critically examine the beauties of Classical Urdu Drama. ✓ The student develops the habit of watching and appreciating Classical and Modern Plays.

HINDI

Programme outcomes, program specific outcomes, and course outcomes offered :

Name Of the Programme/course	Outcome
Semester – I B.A. F.Y.B.A. Compulsory Hindi UAHINCOM 101	1. विद्यार्थियों को कविता और कहानी विधाओं के अतिरिक्त हिन्दी के प्रमुख साहित्यकारों से परिचित कराना। 2. अनुवाद और पत्र लेखन की कला ज्ञान देना। 3. विद्यार्थियों की भाषा को समृद्ध करना।
Semester – I B.A. F.Y.B.A. Compulsory Hindi UAHINCOM 201	1. निबंध लेखन और संवाद लेखन द्वारा भावों एवं विचारों की अभिव्यक्ति में सक्षम बनाना। 2. मुहावरों और व्याकरण के माध्यम से विद्यार्थियों की भाषाको समृद्ध करना। 3. विद्यार्थियों में लेखन के दौरान होने वाली अशुद्धियों को दूर करना।
Semester – I B.A. F.Y.B.A. Ancillary Hindi UAHIN 101	1. विद्यार्थियों को गद्य विधाओं की प्रचलित रचना कहानी, निबंध आदि के आतिरिक्त आत्मकथा, जीवनी, संस्मरण, यात्रा वृतांत और रेखाचित्र आदि नवीनतम विधाओं से परिचित कराना। 2. हिंदी कहानी के आरंभ से लेकर अद्यतन कहानी की प्रवृतियों एवं कहानी के विकास से अवगत कराना। 3. विद्यार्थियों का नवीन गद्य विधाओं के स्वरूप-विवेचन तथा विशेषताओं से परिचय कराना।
Semester – I B.A. F.Y.B.A. Ancillary Hindi UAHIN 201	1. विद्यार्थियों को गद्य विधाओं की प्रचलित रचना कहानी, निबंध आदी के आतिरिक्त आत्मकथा, जीवनी, संस्मरण, यात्रा वृतांत और रेखाचित्र आदि नवीनतम विधाओं से परिचित कराना। २. हिंदी कहानी के आरंभ से लेकर अद्यतन कहानी की प्रवृतियों एवं कहानी के विकास से अवगत कराना। ३. विद्यार्थियों का उपन्यास के स्वरूप – विवेचन तथा विशेताओं से परिचय कराना।
PAPER II, SEMESTER - III B.A. (C.B.C.S.) S.Y.B.A. UAHIN 301	1 विद्यार्थियों में मानवीय संवेदना के विकास के साथ नवीन सामाजिक, सांस्कृतिक बोध और जीवन मूल्यों का विकास होगा। 2 विद्यार्थियों में साहित्य के माध्यम से कलात्मक गुणों की अभिवृद्धि होगी, कला की साहित्यिक विधाओं के प्रति अभिरुचि जागृत होगी तथा रचनात्मक – कौशल को बढ़ावा मिलेगा। 3 विद्यार्थियों में नये वैश्विक-मूल्यों के प्रति सजगता को बढ़ावा मिलेगा एवं पर्यावरणीय चेतना के प्रति दायित्व-बोध उत्पन्न होगा।
PAPER II, SEMESTER - III B.A. (C.B.C.S.) S.Y.B.A. UAHIN 401	1. विद्यार्थियों में मानवीय सवेदनाओं के विकास के साथ नवीन सामाजिक, सांस्कृतिक और राजनीतिक मूल्यों का गुणात्मक विकास होगा। 2. विद्यार्थियों में राष्ट्र-निर्माण हेतु नये सामाजिक, राजनीतिक, सांस्कृतिक विचारों का प्रसार होगा और दायित्व-बोध निर्वहन का विकास होगा। ३.

	3. विद्यार्थियों में नये वैश्विक मूल्यों के प्रति सजगता बढ़ावा मिलेगा एवं मूल्यवादी दृष्टि के प्रति दायित्व-बोध निर्वहन का विकास होगा। 4. विद्यार्थियों में साहित्य-रसास्वादन के साथ कलात्मक अभिरुचि का निर्माण होगा, रचनात्मक-कौशल्य को बढ़ावा मिलेगा।
PAPER III, SEMESTER – III **B.A. (C.B.C.S.)** **S.Y.B.A.** **UAHIN 302**	1. विद्यार्थियों को व्यावहारिक हिन्दी भाषा-दक्षता की प्रवीणता की प्राप्ति होगी। 2. विद्यार्थियों का व्यावसायिक रूप से आत्मनिर्भयता के योग्य बनाना। 3. विद्यार्थी जनसंचार माध्यमों में रोजगार के अवसर व अन्य क्षेत्रों से अवगत होंगे।
PAPER III, SEMISTER – IV **B.A. (C.B.C.S.)** **S.Y.B.A.** **UAHIN 402**	1. विद्यार्थियों को तकनीकी और व्यावहारिक भाषा दक्षता की प्रवीणता प्राप्ति होगी। 2. व्यावसायिक रूप से आत्मनिर्भरता की संभावना बढ़ेगी। 3. जनसंचार माध्यमों में रोजगार के क्षेत्रों से परिचय होगा।
T.Y.B.A. (Paper – IV, V, VI)	1. विद्यार्थी को हिन्दी साहित्य के इतिहास की व्यापक जानकारी प्राप्त होगी, साहित्य की अविरल धारा का परिचय प्राप्त होगा। हिन्दी साहित्य की विभिन्न विधाओं का व्यापक और क्रमबद्ध ज्ञान प्राप्त होगा। 2. विद्यार्थियों में साहित्य के माध्यम से कलात्मक गुणों की अभिवृद्धि होगी, कला की साहित्यिक विधाओं के प्रति अभिरुचि जागृत होगी तथा रचनात्मक-कौशल को बढ़ावा मिलेगा, साहित्य के समकालीन परिवेश से जुड़ सकेंगे, सामाजिक समस्याओं, पक्षों से अवगत होते हुए समाधान की ओर बढ़ सकेंगे। 3. विद्यार्थी जनसंचार, सूचना प्रौध्योगिकी, सोशल मीडिया के अधुनातन माध्यमों में प्रयुक्त हिन्दी-देवनागरी लिपि के अध्ययन, प्रयोग से मीडिया, कोश निर्माण आदि क्षेत्रों में रोजगार में प्रयुक्त हिन्दी-देवनागरी लिपि के अध्ययन, प्रयोग से मीडिया, कोश निर्माण आदि क्षेत्रों में रोजगार के अवसर प्राप्त कर सकेंगें। 4. विद्यार्थी भारतीय काव्यशास्त्र की व्यापक जानकारी प्राप्त होने के साथ काव्यशास्त्रीय मानदंडों का ज्ञान प्राप्त होगा जिसके मादयम से विद्यार्थी स्वयं साहित्य-रचना की प्रवृति की ओर प्रेरित हो सकेगा। 5. विद्यार्थी भाषा के विविध रूप तथा भाषा परिवर्तन के कारणों का ज्ञान प्राप्त कर सकेंगें। भाषा विज्ञान के विभिन्न अंगों से परिचित होते हुए उसकी उपयोगिता का ज्ञान प्राप्त कर सकेंगे। विद्यार्थी हिन्दी-ध्वनियों के उच्चारण सबंधी तथा देवनागरी लिपि का वैज्ञानिक ज्ञान को प्राप्त कर सकेंगे। 6. विद्यार्थियों में मानवीय संवेदनाओं के विकास के साथ नवीन सामाजिक, सांस्कृतिक बोध और जीवन मूल्यों का विकास होगा, जिससे विद्यार्थी अधिक उदार, चेतना-सम्पन्न तथा जिम्मेदार नागरिक बनेंगे। 7. विद्यार्थियों में नये वैश्विक-मूल्यों के प्रति सजगता को बढ़ावा

	मिलेगा एवं पर्यावरणीय चेतना के प्रति दायित्व-बोध उत्पन्न होगा।

Program Outcome for B.Com course

1) **Accountancy**

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
Accountancy & Financial Mgt (FYBCom)	It helps the student to become a complete accountant in a phased manner
Accountancy & Financial Mgt (SYBCom)	It helps the student to become a complete accountant in a phased manner
Management Accounting	It helps the student in analyzing the final accounts and guide the management to run the business in a proper manner
Financial Accounting	It helps the student to become a complete accountant in a phased manner
Costing	It helps the student in getting an overview of determining the cost which is required for the business
Auditing	It helps the student in becoming an auditor as well as help him as an accountant to understand the other aspect of his work
Direct Tax & Indirect Tax	It helps the student in becoming a complete accountant so as to prepare himself in an area where he can practice

2) Commerce

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
Commerce I & II	Understanding of Business Environment with national and international scenario. Understanding of IT enabled services and Entrepreneurship.
EVS	Proper utilization of resources across the world and Mumbai and Kokan region. Distribution of population, demographic composition in India.
FC	Creating general awareness among students about society. Diversification according to religion, sex, age

	composition etc.
Commerce III & IV	To make the learners aware about conceptual knowledge and evolution of Management. To familiarize the learners with the functions in Management. To acquaint the learners with the basic concepts of Production Management, Inventory Management &Quality Management. To provide basic knowledge about Indian Financial Systems. To update the learners with the recent trends in Finance.
Business Law	To provide brief idea and framework of Indian business law To orient the students about legal aspect of business Familiarization of students with case studies
Advertising I & II	To highlight the role of advertising for the success of brands and its importance within the marketing function of a company. It aims to orient learners towards the practical aspects and techniques of advertising. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising To highlight the role of advertising for the success of brands and its importance within the marketing function of a company. It aims to orient learners towards the practical aspects and techniques of advertising. It is expected that this course will prepare learners to lay down a foundation for advanced post-graduate courses in advertising
Field Sales Management	Core terminologies of marketing like 7 Ps, differentiation between Advertising and Publicity, role of Personal Selling, concept of Market Segmentation, organisational structure etc. Understand the concept of sales management, sales organization, sales policies and various aspects of sales force

	management.
FC	To acquaint learner with Rights of citizen like RTI,PIL and Ecological concern anthropocentrism biocentrism etc To acquaint learner with Science and study of technologies To acquaint learner with Personality development and communication skills
Travel & Tourism	To acquaint learner with concept and types of tourism To acquaint learner the factor influencing tourism, Impact of tourism on society. Sustainable tourism concepts to learner.
Export Marketing	To acquaint learner with concept of export. To understand India Foreign Trade Policy To understand Export Incentives and Assistance.
MHRM	To understand basic concept of marketing, evolution of marketing concept, MIS, Market segmentation, consumer behavior and application of 7Ps. To understand HR management, career planning, management development programme, Job analysis and specification, techniques of interview and selection procedure, grievance redressal mechanism, SQ and EQ
MSSI	To acquaint learner with concept of small scale industries To understand legal procedure for setting SME in india and agro based industries, sources of funding and institutional finance for SME To acquaint learner with marketing mechanism for SME and Export potential of SME in international market, role of women entrepreneur, self employment and project planning and management.
MR	To acquaint learner with data warehousing, data mining and MIS. To understand the concept of Hypothesis and preparation for questionnaire. Data processing and data editing, data interpretation with report writing.

Program Outcomes for B.Sc Courses

1) **Chemistry**

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/ course	**Outcome**
F. Y, S. Y, and T. Y. B. Sc.	Programme outcome 1. To infuse in the learner a spirit of inquiry into the fundamental aspects of the various core areas of Chemistry. 2. To make the learner proficient in analysing the various observations and chemical phenomena presented to him during the course. 3. To make the learner capable of solving problems in the various units of this course. 4. To give the learner an opportunity to get hands on experience of the various concepts and processes in the various branches of chemistry. 5. To impart various skills of handling chemicals, reagents, apparatus, instruments and the care and safety aspects involved in such handling. 6. To make the learner capable of analysing and interpreting results of the experiments he conducts or performs.
T. Y. B. Sc-Chemistry	Programme specific outcome ✓ **Paper I** • **Unit I** This unit will enable the students to learn various types of molecular spectroscopic methods like rotational,vibrational,Vibration-Rotational spectrum of diatomic molecule and Raman spectroscopy. • **Unit II** In this unit the students will learn various colligative properties like Vapour pressure and relative lowering of vapour pressure, Elevation in boiling point of a solution, Depression in freezing point of a solution, osmotic pressure and their thermodynamic aspects.The students will also learn Collision theory of reaction rates and its applications Unimolecular reaction Lindemann theory and Bimolecular reaction. ✓ **Unit III** This unit will enable the students to learn the basic terms in nuclear Chemistry like -radioactive constants (decay constant, half life and average life) and units of radioactivity, detection and measurement of radioactivity:

	Applications of radioisotopes as tracers, nuclear reactions-Fission and Fusion. ✓ **Unit IV** The students will be made aware of various surface phenomena like Adsorption:-Physical and Chemical Adsorption, its postulates and thermodynamics. Learners will also be taught B.E.T. equation for multilayer adsorption for Determination of surface area of an adsorbent using this equation. Colloids and their electrical properties and surfactants. ✓ **Paper II** • **Unit–I:**To enable the learner to recognize various symmetry elements and symmetry operations in a molecule. To understand the relationship between group theory and molecular symmetry. To study the application of MOT for heteronuclear diatomic molecules like CO, NO, HCl as well as in polyatomic species like BeH_2, H_2O and H_3^+. • **Unit II-** To understand the structure of solids in terms different packing (SC, BCC,HCP, FCC) in crystal lattices and calculation of packing density for these crystals. To know the stoichiometric point defects in solids. To provide basic knowledge of superconductivity, different types of superconductors and applications. • **Unit III** -learner will come to know chemistry of lanthanides actinides: electronic configuration oxidation states magnetic properties occurrence, extraction, separationand applications of lanthanides. • **Unit IV-** To make learnerfamiliar with the basic knowledge of the non-aqueous solutions, their classification and applications of *non-aqueous such as liquid ammonia and dinitrogentetraoxide*.To understand the trends in properties and reactivity of the *group 16* elements and *group 17* elements. ✓ **Paper III** • **Unit I** This unit will enable the students to learn the basic terminologies like bond fission, reaction intermediates, electrophiles & nucleophiles, ligand, base, electrophilicity vs. acidity & nucleophilicity vs basicity used in Reaction mechanism. They will also lean Neighbouring group participation in nucleophilic substitution reactions, participation of lone pair of electrons, kinetics and its stereochemical outcome, Acyl nucleophilic substitution (Tetrahedral mechanism), Acid catalysed esterification of carboxylic acids and base promoted hydrolysis of esters. Students will also learn the basics of Pericyclic reactions, classification and nomenclature and its types like Electrocyclic reactions, cycloaddition, sigma tropic rearrangement, group transfer reactions, cheletropic reaction,

	Pyrolytic elimination.The students will also learn the different aspects of Photochemical reactions. • **Unit II** The learner can understand various aspects of Stereochemistry. Molecular chirality and elements of symmetry: Mirror plane symmetry, inversion center, rotation -reflection (alternating) axis. Chirality of compounds without a stereogenic center: cummulenes and biphenyls. • **Unit III** o Students will understand different aspects of IUPAC nomenclature of organic compounds and able to draw structures o Students will be able to explain organic synthesis,natural products. o Students will be able to explain fundamental concept of organic reaction mechanism and electronic effects. ✓ **Unit IV** The students will learn the various types of organic spectroscopy particularly Electronic and Mass spectrometry.Basic concepts of chromophore, auxochrome, bathochromic and hypsochromic shifts, hyperchromic and hypochromic effects, chromophore-chromophore and chromophore-auxochrome interactions will be made clear to students. In addition mass spectrometric fragmentation of alkanes and carbonyl compounds will be made clear to students. ✓ **Paper IV** • **Unit I** –Students will be able to calculate concentration using different units and conversion between different concentration units. • **Unit II** In this unit the students will learn the various methods of titrimetric analysis like Redox Titrations with numerical. Construction of the titration curves and calculation of Esystem in aqueous medium in case of: (1) One electron system (2) Multielectron system. Complexometric Titrations like use of EDTA as titrant and its standardisation, absolute and conditional formation constants of metal EDTA complexes, Selectivity of EDTA as a titrant. • **Unit III** The students will learn various types of spectroscopy like Atomic Spectroscopy, Flame Emission spectroscopy and Atomic Absorption Spectroscopy. • **Unit IV**-Students will understand Principal and some technical knowledge of GC and HPTLC.Students will be able to evaluate strength, applications and limitations of important chromatographic technique. ✓ **Paper V**

	• **Unit I& II** Pharmaceutical Chemistry Students will understand different medicinal terms and chemical class with examples of analgesics,antipyretics,anti-inflammatory,antidiabetic,cardiovascular drugs etc. • **Unit III –** The student will acquire knowledge on characteristic properties of dyes, naming of dyes, natural dyes, synthetic dyes, types of substrate-natural, synthetic, semi-synthetic fibres, binding forces of dyes on substrates, basic operations involved in dyeing process and Optical brighteners. ✓ **Unit IV –** The student understands relation between colour and chemical constitution in terms of Armstrong theory, Witts theory, VBT, MOT, Unit processes involved and preparation of Benzene, Naphthalene and Anthraquinone derivatives.
S. Y. B. Sc-Chemistry	✓ **Paper I** • **Unit I** The students will be able to understand basic thermodynamic functions like Free Energy, Helmholtz Free Energy, Gibb's Free Energy, Variation of Gibb's free energy with Pressure and Temperature, Gibbs-Helmholtz equation, van't Hoff reaction isotherm and van't Hoff reaction isochore and their thermodynamic aspects. Electrochemistry in solution phase, Conductivity, equivalent and molar conductivity, Kohlrausch law. The styudents will also be able to determine ionization constant of weak electrolyte, solubility and solubility product of sparingly soluble salts using conductance measurement. • **Unit II** • Student learns different types of hybrid orbitals and structures of molecules, wave mechanical treatment for H_2 molecule on the basis of MOT involving Schrodinger wave equation. • **Unit III** o Students will understand different aspects of IUPAC nomenclature of organic compounds. o Students will be able to explain fundamental concept of organic reaction mechanism and preparations and reactions of alkyl halide,alcohols,phenols,organometallics and epoxides. ✓ **Paper II** • **Unit I** The students willunderstand Arrhenius equation, Concept of energy of activation.Theories of reaction rates: Collision theory and activated complex theory of bimolecular reactions. Comparison between the two theories. Effect of temperature on the rate of reaction. Thermodynamics of ideal solutions and Raoult’s law, deviations from Raoult’s law.

	• **Unit II** • Learner will understand the Chemistry of Boron compounds, Silicon and Germanium and chemistry of Nitrogen family. • Unit III- o To recognize and assign names to aldehydes and ketones. o To write the mechanism for nucleophilic addition and nucleophilic addition-elimination reactions of aldehydes and ketones, and be able to predict the products of such reactions. o Be able to explain the relative reactivity of carbonyl compounds toward nucleophilic addition. o The students will get familiar with particular properties and reactions for the most important nitrogen containing compound, heterocyclic compound as well as different systems of nomenclature. o The students will develop fundamental theoretical understanding of nitrogen containing compound and heterocyclic compound. ✓ **Paper III** • **Unit I** Learners should be able to • Select a method of analysis. • Decide how to identify a sample and prepare it for analysis. • Select a procedure for analysis 4. Identify sources of possible errors in the results obtained. • **Unit II** o Learner will come to know terms involved inTitrimetic Analysis o Their types calibration of tools primary standard and secondary standard o Types and applications of gravimetric method • **Unit III** o On completing the learning of this unit the learner is expected to know. o The various instrumental methods of analysis. o Advantages of using instruments to make measurements. o The various observable properties of a given analyte and the stimulus best suited for its. o Analysis. Know about a generalized diagram of an analytical instrument. o Select a suitable instrumental method for analysis. o Appreciate the basic terms in spectrometry. o Use the relationship between absorbance (and its variations) and concentration of the analyte. o Chose suitable method for photometric titrations.

F. Y. B. Sc-Chemistry	✓ **Paper I** • **Unit I** Learner should be able to o Know the physical chemical properties reaction of binary compounds comparative trends applications of main group elements. o Know natural and anthropogenic sources of air pollutants. o Know the effects of air pollutants on human health, vegetation and nonliving materials. o Take precautionary measures and find solutions knowing the impact of the air pollutants on the environment. **Unit II** Learner should be able to o Comprehend the periodic table by knowing arrangement of elements in 18 groups and 7 periods. o Understand the periodic trends in Atomic and ionic size; electron gain enthalpy and ionization enthalpy,. o Calculate the effective nuclear charge for any electron in any atom or ion as well as for incoming extra electron. o Find the electronegativity values by Pauling, Mulliken and AlredRochowelectronegativities if provided the requisite data. o Know and use various key terms. o Appreciate the Historical perspectives of atomic structure. o The learner will come to know that (a).The atomic mass is concentrated in the atomic nucleus while there are empty spaces in the atom. (b). The electron has a spin which can take clockwise and anticlockwise motions. (c). Electrons do not exist in nucleus while protons and neutrons can. (d). Radial distribution curves for orbitals. (e). Orbitals are of different shapes and have different orientations in space. (f). Electrons occupy the orbitals depending upon the energy of orbitals. (g). Preferential occupation of orbitals particularly w.r t. 4s and 3d orbitals. (h).Various quantum numbers which can define a particular orbital. (i). various spectral series in the case of hydrogen. (j). Bohr's model is not applicable to hydrogen atom only but also to other hydogenic species. • **Unit III** o Students will understand different aspects of IUPAC nomenclature of organic compoundsand able to draw structures

	○ Students will be able to explain concept of hybridization and predict the shapes organic molecules. ○ Students will be able to explain fundamental concept of organicreaction mechanism and electronic effects. ✓ **Paper II** • **Unit** ○ The learner will be able to measure of reaction rates, differentiate between order and molecularity of reaction, can derive integrated rate equation of first and second order reactions. ○ The student will also learn to determineSurface tension by drop numbermethod. ○ Viscosityby Ostwald viscometer. ○ Refractive indexby Abbe's refractometer. • **Unit II** The students will be able the comparative chemistry of main group elements in respect of Metallic and non-metallic nature, oxidation states, electronegativity, anomalousbehaviour of second period elements, allotropy, catenation, diagonal relationship. • **Unit III** ○ To distinguish and draw different molecular projections. ○ To recognize difference between configuration and conformation. ○ To distinguish among different form of stereoisomerism. ○ To identify optically active and inactive compounds. ○ To assign stereo descriptors. ○ To describe, and sketch the conformations of cyclohexane. ○ To analyse the stability of cyclohexane in terms of angular strain, torsional strain and steric interactions. ○ To recognize and distinguish between aromatic and ant-aromatic compounds by their structures. ○ To know the properties of aromatic and anti-aromatic compounds, and the chemical consequences of aromaticity. ○ To recognize and be able to write the mechanism of electrophilic aromatic substitution. ○ To be able to outline the completed electrophilic aromatic substitution reactions of the following types: halogenation, nitration, sulfonation, and Friedel-Crafts acylation & alkylation.

2) Physics

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course		Outcome
T. Y. B. Sc. SEM - VI	USPH601: Classical Mechanics	The students are expected to learn: • Various kinds of motions that can occur under a central potential and their applications to planetary orbits. • Moving coordinate system, rectilinear as well as rotating. • The concepts needed for the formalism of Lagrange's equations and derive the equations using D'Alembert's principle and solving examples using this formalism. • Fluid mechanics and the dynamics of rigid bodies. • Nonlinear mechanics.
	USPH602: Electronics	The students are expected to learn: • The basics of semiconductor devices and their applications. • The basic concepts of operational amplifier: its prototype and applications as instrumentation amplifier, active filters, comparators and waveform generation. • The basic concepts of timing pulse generation and regulated power supplies • The basic electronic circuits for universal logic building blocks and basic concepts of digital communication. • Develop quantitative problem solving skills in all the topics covered.
	USPH603: Nuclear Physics	The students are expected to learn: • The fundamental principles and concepts governing classical nuclear and particle physics. • To get knowledge of their applications, interactions of ionizing radiation with matter. • The key techniques for particle accelerators, the physical processes involved in nuclear power generation.

		• To get the knowledge on elementary particles will help students to understand the fundamental constituents of matter and lay foundation for the understanding of unsolved questions about dark matter, antimatter and other research oriented topics.
	USPH604: Special Theory of Relativity	The students are expected to learn: • The significance of Michelson Morley Expt. • The importance of Postulates of STR, Lorentz transformations. Common sense vs. Einstein's concepts of space & time. • To develop the concepts of transformation of physical quantities like mass, momentum, force, energy, current density, magnetic field etc. • to solve problems based on length contraction, time dilation, resolve paradoxes in relativity etc.
	USPHP07: Practicals of Course USPH601 + Course USPH602 and USPHP08: Practicals of Course USPH603 + Course USPH604	The students are expected to learn: • The relevant concepts. • Designing of the experiments. • Handling and operating a number of equipments. • Recording of observations, analysing the data obtained, including plotting of graphs and finding results. • The estimation of possible errors in the measurements.
	USACEI601: Digital Electronics, Microprocessor and its applications, Programming in C++	The students are expected to learn: • Analyze / design and implement combinational logic circuits. • Develop assembly language programing skills and real time applications of microprocessor. • Illustrate how to interface the I/O peripheral (PPI) with 8085 microprocessor • Architecture, silent features, instruction set, programming and interfacing of 8051 microcontroller. • Develop the programming skills in

		programming Language C++.
	USACEI6P1: Practical of Digital Electronics, Microprocessor and its applications, Programming in C++	The students are expected to learn: • Digital electronics circuits. • Learn execution of 8085 programming and 8255 interfacing on programming kit. • Gets familiar with C++ programming. • Get practical training to interface different programmable peripherals and I/O devices to microprocessor and microcontroller.
T. Y. B. Sc. SEM - V	USPH501: Mathematical Methods in Physics	The students are expected to learn: • Some mathematical techniques required to understand the physical phenomena and get exposure to important ideas of statistical mechanics. • Ability to solve problems in probability. • The concept of independent events and work with standard continuous distributions. • The functions of complex variables and solving nonhomogeneous differential equations and partial differential equations. • The concept of microstates, Boltzmann distribution and statistical origins of entropy. • Various concepts of Statistical Mechanics.
	USPH502: Solid State Physics	The students are expected to learn: • The basics of crystallography, Electrical properties of metals, Band theory of solids, demarcation among the types of materials, Semiconductor Physics and Superconductivity, Fermi Probability distribution function, Density of states, Conduction in Semiconductors and BCS Theory of Superconductivity. • To demonstrate quantitative problem solving skills in all the topics covered.
	USPH503: Atomic Physics	The students are expected to learn: • Application of quantum mechanics in

		Atomic Physics. • The importance of electron Spin, symmetric & anti symmetric wave functions & vector atom model. • The effect of magnetic field on atoms & its application. • The Molecular Physics & Its Applications.
	USPH504: Electrodynamics	The students are expected to learn: • The laws of electrodynamics and be able to perform calculations using them. • The Maxwell's electrodynamics and its relation to relativity • How optical laws can be derived from electromagnetic principles. • to develop quantitative problem solving skills.
	USPHP05: Practicals of Course USPH501 + Course USPH502 And USPHP06: Practicals of Course USPH503 + Course USPH504	The students are expected to learn: • The relevant concepts. • Designing of the experiments. • Handling and operating a number of equipments. • Recording of observations, analysing the data obtained, including plotting of graphs and finding results. • The estimation of possible errors in the measurements.
	USACEI501: Analog Circuits, Instruments and Consumer Appliances	The students are expected to learn: • The construction, working and uses of different types of transducers and Sensors • The concept of signal conditioning, devices used and their operations. • Get the insight of the modern medical instruments in principle, which are used in day to day life.
	USACEI5P1: Practical of Analog Circuits, Instruments and Consumer Appliances.	The students are expected to learn: • The use of electronic equipments. • To get acquainted with the measuring instruments used in laboratory. • The concept of D/A and A/D conversion, positive/negative clipper circuit, second order high/low pass filter and square and triangular wave

		generation using OPAMP. • Student can also learn variable dual power supply, making of PCB and different hands-on experiments.
S. Y. B. Sc. SEM - IV	USPH401: Optics and Digital Electronics	The students are expected to learn: • The diffraction, interference and polarization processes and their applications. • Working of interferometers and other optical instruments. • Working of digital circuits and ICs. • To develop quantitative problem solving skills in all the topics covered.
	USPH402: Quantum Mechanics	The students are expected to learn: • The postulates of quantum mechanics and to understand its importance in explaining significant phenomena in Physics. • To develop quantitative problem solving skills in all the topics covered.
	USPH403: Applied Physics-II	The students are expected to learn: • The architecture, salient features, instruction set, and assembly language programming. • Different types of radiations, their effects and radiation detectors. • The advantages and disadvantages of digital electronics in communication system. • Different types of noises and modulation in digital/analog electronics. • Properties of matter and applications of geology. • The microprocessor technology and programming.
	USPHP4: Practical course - 4 (Group A,B,C and Demo)	The students are expected to learn: • The relevant concepts. • Designing of the experiments. • Handling and operating a number of equipments. • Recording of observations, analysing the data obtained, including plotting of graphs and finding results. • The estimation of possible errors in the

		measurements.
S. Y. B. Sc. SEM - III	USPH301: Mechanics and thermodynamics	The students are expected to learn: • The concepts of mechanics & properties of matter. • The basic concepts of thermodynamics & its applications. • Low temperature Physics and its applications. • Concept and working of various types of engines.
	USPH302: Vector calculus, Analog Electronics	The students are expected to learn: • The basics of transistor biasing, operational amplifiers, their applications, oscillators etc. • Numerical problem solving skills. • The basic concepts of mathematical physics and their applications. • Basic laws of electrodynamics.
	USPH303: Applied Physics - I	The students are expected to learn: • The role of Physics in 'interdisciplinary areas related to materials, Bio Physics, Acoustics etc. • The scope of the subject in Industry & Research. • Experimental learning opportunities.
	USPHP3: Practical course - 3 (Group A,B,C and Skill)	The students are expected to learn: • The relevant concepts. • Designing of the experiments. • Handling and operating a number of equipments. • Recording of observations, analysing the data obtained, including plotting of graphs and finding results. • The estimation of possible errors in the measurements.
F. Y. B. Sc. SEM - II	USPH201: Mathematical Physics	The students are expected to learn: • Basic mathematical concepts and applications. • Quantitative problem solving skills in all the topics covered.
	USPH202: Electricity and Electronics	The students are expected to learn: • Network theorems and their applications. • The concepts of DC circuits, AC Circuits, AC Bridges, rectifiers etc and

		their application. • The concepts of Digital electronics and its application. • Basic concepts of Electrostatics, Magnetostatics and their applications.
	USPHP2: Practical II	The students are expected to learn: • The relevant concepts. • Designing of the experiments. • Handling and operating a number of equipments. • Recording of observations, analysing the data obtained, including plotting of graphs and finding results. • The estimation of possible errors in the measurements.
F. Y. B. Sc. SEM - I	USPH101: Classical Physics	The students are expected to learn: • Newton's laws, various types of forces, concepts of friction and the concepts of elasticity, fluid mechanics. • Equivalent Focal length of lenses, aberrations, interference. • Behaviour of real gases, thermodynamic systems and laws thermodynamics.
	USPH102: Modern Physics	The students are expected to learn: • Radioactivity, carbon dating, structure of nuclei, type isotopes and their applications. • Types nuclear detectors, counters and nuclear reactions. • Quantum mechanical concepts, X-rays and Compton Effect etc.
	USPHP1: Practical I	The students are expected to learn: • The relevant concepts. • Designing of the experiments. • Handling and operating a number of equipments. • Recording of observations, analysing the data obtained, including plotting of graphs and finding results. • The estimation of possible errors in the measurements.

3) Zoology

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
F.Y.B.Sc. Sem I Course I USZO101	✓ Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest and love for the subject of Zoology. ✓ Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation. ✓ Minds of learners would be impulsed to think differently and would be encouraged ipso facto to their original crude ideas from the field of biological sciences.
F.Y.B.Sc. Sem I Course II USZO102	✓ Learners would work safely in the laboratory and avoid occurrence of accidents (mishaps) which will boost their scholastic performance and economy in use of materials/chemicals during practical sessions. ✓ Learners would understand recent advances in the subject and their applications for the betterment of mankind; and that the young minds would be tuned to think out of the box. ✓ Students will be skilled to select and operate suitable instruments for the studies of different components of Zoology of this course and also of higher classes including research.
F.Y.B.Sc. Sem II Course III USZO201	✓ This unit would allow learners to study about nature of animal population, specific factors affecting its growth and its impact on the population of other life form. ✓ Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment and will lead to better understanding about implications of loss of fauna specifically on human being, erupting spur of desire for conservation of all flora and fauna. ✓ Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism.

F.Y.B.Sc. Sem II Course IV USZO202	✓ Healthy dietary habits would be inculcated in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits. ✓ Promoting optimum conservation of water, encouragement for maintaining adequate personal hygiene, optimum use of electronic gadgets, avoiding addiction, thus facilitating achievement of the goal of healthy young India in true sense. ✓ Learners will be able to promptly recognize stress related problems at initial stages and would be able to adopt relevant solutions which would lead to psychologically strong mind set promoting positive attitude important for academics and would be able to acquire knowledge of cause, symptoms and precautions of infectious diseases.
S.Y.B.Sc. Sem III Course V USZO301	✓ Learner would comprehend and apply the principles of inheritance to study heredity. Learner will understand the concept of multiple alleles, linkage andcrossing over. ✓ Learner will comprehend the structure of chromosomes and its types. Learner will understand the mechanisms of sex determination. Learner would be able to correlate the disorders linked to aparticular sex chromosome. ✓ Learner will understand the importance of nucleic acids as genetic material. Learner would comprehend and appreciate the regulation of geneexpressions.
S.Y.B.Sc. Sem III Course VI USZO302	✓ Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy. Learner would be able to correlate the habit and habitat withnutritional, excretory and osmoregulatory structures. ✓ Learner would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy. Learner will be able to correlate the habit and habitat of animalswith respiratory and circulatory organs. ✓ Learner would understand the process of control and coordination by nervous and endocrine regulation. □

	Learner would be amazed by various locomotory structures found in the animal kingdom. Learner would be acquainted with various reproductive strategiespresent in animals.
S.Y.B.Sc. Sem III Course VII USZO303	✓ Learner would gain insight into different types of animal behaviour and their role in biological adaptations. Learner would be sensitized to the feelings which areinstrumental in social behaviour. ✓ Learner would understand the general epidemiological aspects of parasites that affect humans and take simple preventive measures for the same. Learner would comprehend the life cycle of specificparasites, the symptoms of the disease and its treatment. ✓ Learner would gain knowledge on animals useful to mankind and the means to make the most of it. Learner would learn the modern techniques in animal husbandry. Learner would pursue entrepreneurship as a career.
S.Y.B.Sc. Sem IV Course VIII USZO401	✓ Learner will gain insights into the origin of life. □ Learner will analyse and critically view the different theories ofevolution. ✓ Learner would understand the forces that cause evolutionary changes in natural populations. Learner would comprehend the mechanisms of speciation □ Learner will be able to distinguish between microevolution,macroevolution and megaevolution. ✓ The learner would develop qualities such as critical thinking and analysis. The learner will imbibe the skills of scientific communication andhe/she will understand the ethical aspects of research.
S.Y.B.Sc. Sem IV Course IX USZO402	✓ Learner would acquire insight into the composition of the transport mechanisms adopted by the cell and its organelles for itsmaintenance and composition of cell. ✓ Learner would appreciate the intricacy of endomembrane system. Learner would understand the interlinking of endomembranesystem for functioning of cell. ✓ The learner will realize the importance of biomolecules and theirclinical significance.
S.Y.B.Sc. Sem IV Course X	✓ Learner will be able to understand and compare the

USZO403	different types of eggs and sperms. Learner will be able to understand and compare the differentpre-embryonic stages. ✓ Learners will able to understand human reproductivePhysiology. Learners will become familiar with advances in ART andrelated ethical issues. ✓ The learners will be sensitized about the adverse effects ofpollution and measures to control it.
T.Y.B.Sc. Sem V Course XI USZO501	✓ Learners will apprehend the basis of classification and modern classification up to class of the lower invertebrate animals. ✓ The learners will be familiarized with classification up to phylum Nematoda along with their examples. ✓ Learners will get an idea of higher groups of invertebrate animal life, their classification and their peculiar aspects. ✓ Learners will get an idea of general characteristics and details of invertebrate animal systems.
T.Y.B.Sc. Sem V Course XII USZO502	✓ The learner shall comprehend basic haematology. The learner will be able to identify various components of haemostatic systems. ✓ The learner will be familiar with the terminology used and diagnostic tests performed in a pathological laboratory. The learner shall be acquainted with diagnostic approaches in haematological disorders. The learner will be better equipped for further pathological course or working in a diagnostic laboratory. ✓ The learner shall comprehend the types of immunity and the components of immune system. The learner will realize the significant role of immune system in giving resistance against diseases. ✓ The learner shall understand immunopathology and the principles and applications of vaccines. The learner will develop basic understanding of immunology of organ transplantation.
T.Y.B.Sc. Sem V Course XIII USZO503	✓ Learner would appreciate the well planned organization of tissues and cells in the organ systems. ✓ The course will prepare learner to develop broad understanding of the different areas of toxicology. It

	will also develop critical thinking and assist students in preparation for employment in pharmaceutical industry and related areas. ✓ Learner will be familiar with various medical terminology pertaining to pathological condition of the body caused due to diseases. ✓ The learner will be able to collect, organize and analyse data using parametric and non- parametric tests. They will also be able to set up a hypothesis and verify the same using limits of significance.
T.Y.B.Sc. Sem V Course XIV USZO504	✓ Learner will be able to understand the importance of various types of epidermal and dermal derivatives along with their functions. ✓ Learner will be able to understand the structure, types and functions of human skeleton. ✓ To study long limb muscles involved in body movements. To identify various arrangements of the long limb muscles and to relate the arrangement with contraction and motion. To study muscle injuries and syndromes. ✓ Learner will be able to understand the processes involved in embryonic development and practical applications of studying the chick embryology.
T.Y.B.Sc. Sem V Course USACFBIO501	✓ Learner shall understand and learn about the use of sea safety, navigational equipments and oceanographic instruments. Learner shall understand basic physical, chemical and biological oceanography. ✓ Learner shall comprehend boat building techniques and design of engines used in mechanized boats. Learner shall understand the operations of various types of nets and fishing method. ✓ Learner shall understand breeding techniques, hatchery and management of fin-fish and shell fishes. Learner shall understand the rearing techniques. ✓ Learner will be oriented towards understanding the various stages of quality control. Learner will gain knowledge about the postmortem changes, spoilage mechanisms and methods involved in evaluating the freshness and quality of fishes and prawns / shrimps. Learner shall comprehend the value of maintaining and taking sanitary precautions during the processing

	and packaging operations
T.Y.B.Sc. Sem VI Course XV USZO601	✓ Learners will get an idea of origin of Chordates, its taxonomy up to class with reference to phylogeny and their special features. ✓ Learners will understand the characteristic features and examples of class of Reptilia, Aves and Mammalia. ✓ Learners will get an idea of vertebrate animal life after studying one representative animal- shark.
T.Y.B.Sc. Sem VI Course XVI USZO602	✓ The learner shall understand fundamentals of enzyme structure, action and kinetics. The learner shall appreciate the enzyme assay procedures and the therapeutic applications of enzymes. ✓ The learner shall comprehend the adaptive responses of animals to environmental changes for their survival. ✓ The learner shall understand the types and secretions of endocrine glands and their functions. ✓ The learner shall understand the significance of tissue culture as a tool in specialized areas of research. The learner will appreciate its applications in various industries.
T.Y.B.Sc. Sem VI Course XVII USZO603	✓ Learner shall get an insight into the intricacies of chemical and molecular processes that affect genetic material. The course shall prepare learner to recognize the significance of molecular biology as a basis for the study of other areas of biology and biochemistry. Learner shall also understand related areas in relatively new fields of genetic engineering and biotechnology. ✓ The learner shall get acquainted with the vast array of techniques used to manipulate genes which can be applied in numerous fields like medicine, research, etc. for human benefit. ✓ The learner shall become aware of the impact of changes occurring at gene level on human health and its diagnosis. ✓ To introduce learner to bioinformatics - a computational approach to learning the structure and organization of genomes, phylogeny and metabolism.

T.Y.B.Sc. Sem VI Course XVIII USZO604	✓ Learner will understand the different factors affecting environment, its impact and environment management laws. ✓ Learner will be able to understand various methods for wildlife conservation. Learner will be able to apply knowledge to overcome the issues related to wildlife conservation and management. ✓ Learner will understand the paradigms of discovery and commercialization of biological resources and knowledge gained from self-medication observed in animals. ✓ The learners will become acquainted with how and why different animal species are distributed around the globe.
T.Y.B.Sc. Sem VI Course USACFBIO601	✓ Learner will be oriented towards understanding causes, pathogenicity, prophylaxis and preventive measures of various fish diseases and physiological disorders. ✓ Learners will acquire the knowledge and would put in to practice the preservation and processing techniques for commercial ventures. ✓ Learner will gain sound knowledge about the fish by-products and value-added products. ✓ Learner will explore good manufacturing practices while manufacturing these products.

4) Mathematics

Name of the programme/course	Outcome
B.Sc.	**At the graduation in science faculty a student should have** • Acquired the knowledge with facts and figures related to various subjects in pure sciences such as Physics, Chemistry, Botany, Zoology, Mathematics, etc. • Analyzed the given scientific data critically and systematically and the ability to draw the objective conclusions. • Developed flair by participating in various social and cultural activities voluntarily, in order to spread knowledge, creating awareness about the social evils, blind faith, etc. • Acquired the skills in handling scientific instruments, planning and performing in laboratory experiments • Been able to think creatively (divergently and convergent) to propose novel ideas in explaining facts and figures or providing new solution to the problems.
program specific outcomes **(B.Sc. Mathematics)**	**At the completion of B. Sc. in Mathematics students are able to:** • Learn to solve improper differential equations. • Make use of linear equations for solving any differential equations • Understand the Concepts of Matrices and linear equations. • Learn properties of Linear Transformation. • Understand the Concepts of sequence and series and their convergence/divergence. • Formulate and solve LPP.
COURSE OUTCOMES: At the completion of the course the successful students will be able to: F.Y.B.Sc. Semester I	
CALCULUS I	• Understand the concept of real numbers, AM_GM inequalities, lub and glb • Learn properties of sequence like convergence, divergence and subsequence. • Find limit and continuity of real valued function
ALGEBRAI	• Understand the concept of integers, congruence relation • Learn about the concept of equivalence relation • Solve problems on polynomials
F.Y.B.Sc.(CBCS) Semester II	

CALCULUS II	• Learn properties of series and check convergence of series using Cauchy criterion • Learn about limit and continuity of real valued function their bounds • Use derivative to find maxima and minima of functions
ALGEBRAII	• Learn about the system of equation and matrices • Understand the concept vector space, subspace and related terms like linearly dependent, linearly independent. • Understand the idea of basis and linear transformation
S.Y.B.Sc. Semester III	
CALCULUS III	• Learn the concept of calculus of several variables i.e. function having domain R^n • Calculate the total derivative, higher order partial derivatives and Gradient of the functions. • Find maxima and minima of functions of two variables.
ALGEBRA III	• Find rank of the matrices, understand the concept of linear transformations and related terms like row space, column space, rank, nullity. • Use determinant as a tool to solve system of equations, find area and volume using determinants. • Learn about inner product spaces, orthogonal/ orthonormal bases.
DISCRETE MATHEMATICS	• Find the permutations and formulate and solve the recurrence relations • Learn about the preliminary counting. • Learn about the advanced counting.
S.Y.B.Sc. Semester IV	
CALCULUS IV	• Evaluate the Riemann Integrations of the functions • Use different techniques to solve improper integrals • Learn about Beta and Gamma functions and use integrations to find area and volumes
ALGEBRA IV	• Decide whether a given set forms group under given operation and some group related properties. • Learn about cyclic group and their properties • Understand about the cosets of group and Homomorphism and isomorphism.
ORDINARY	• Solve first order first degree differential equations

DIFFERENTIAL EQUATIONS	• Solve second order linear differential equations • Solve system of homogenous linear differential equations
T.Y.B.Sc. Semester V	
Multivariable Calculus II	• Calculate volume and area of given object. • Understand the concept of complex integration. • Relate between single, double and triple integration.
Linear Algebra	• Apply mathematical methods involving arithmetic, algebra, geometry and graph to solve the problem. • Represent mathematical information and communicate mathematical reasoning symbolically and verbally. • Interpret and analyze numeric data, mathematical concepts and identify patterns to formulate and validate reasoning.
Topology of Metric Spaces	• Calculate distance between two numbers, sets and functions and check whether sets are open or close • Learn about completeness property of metric space and use nested interval theorem • Learn about relationship of functions with compactness and fixed point theorem
Numerical Analysis I	• Know basics of error and approximate solution. • Solve algebraic and transcendental equations and system of equations. • Formulate the problem and find the way to solve it
Operations Research I	• Formulate and solve the LPP using graphical and simplex method • Solve LPP using dual simplex method and IPP using graphical and Gomory's method. • Learn about random variables and their distribution • Find probability of events using R and MS Excel
T.Y.B.Sc. Semester VI	
BASIC COMPLEX ANALYSIS	• Find complex series of a function at any given point • Solve integration using residue theorem. • Complex analysis is a basic tool and helpful in further studies of measure theory and topology
ALGEBRA	• Students will have a working knowledge of important mathematical concepts in abstract algebra such as definition of group, order of

	group, order of an element. • Students will be knowledgeable of subgroups such as normal subgroup, cyclic subgroup and their characteristics. • Students will be knowledgeable of concepts such as permutation groups, factor groups and abelian group.
Topology of Metric Spaces and Real Analysis	• Define continuous functions on different metric spaces; differentiate between continuous and uniformly continuous functions, know relationship between continuous functions and compact metric spaces. • Understand the concept of connectedness, separation of sets and their relation with compactness. • Understand the concept of sequence and Series of functions. They can think a function geometrically.
Numerical Analysis II	• Construct the function which approximately fits the given (n_points) data. • Increase the accuracy of the result by reducing the errors. • Derive the formula to solve the integration, differentiation and interpolation.
Operations Research II	• Calculate amount of information through any channel by taking care of entropy and other resistances • Find correct decision under uncertainty and under risk for the given problem • Calculate simple interest, compound interest, annuities and present value. • Understand the concept of shares and mutual funds and related terms

5) Botany

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
F.Y.B.Sc. Sem I Course I USBO101	✓ Learner would understand the classification, general characters, cell structure, pigments, reserve food, range of thallus, types of reproduction and alternation of generation of **Chlorophyta** :*Nostoc, Spirogyra* and economic important of Algae. ✓ Learner would understand the classification, general characters, cell structure , pigments, reserve food, range of thallus, types of reproduction and alternation of generation of **Phycomycetes**: *Rhizopus*and *Aspergillus*, *Spirogyra* and economic important of fungi and mode of nutrition. ✓ Learners would understand the classification, general characters, cell structure, pigments, reserve food, range of thallus, types of reproduction and alternation of generation of **Bryophyta**: *Riccia ,Hepaticea*.
F.Y.B.Sc. Sem I Course II USBO102	✓ Learners would understand the introduction, general characters of plant cell: cell wall, plasma membrane. Learners would understand the Ultra structure and functions of following cell organelles: Endoplasmic reticulum and chloroplast. ✓ Learner would understand the introduction to Ecology and concept of ecosystem. Students would learn the concept of Energy flow in an Ecosystem and types of Ecosystem. ✓ Learner would understand the introduction to genetics and Hybridization experiment of Mendelian Genetics. Learner would understand the Monohybrid and Dihybrid cross and ratio and also understand the concept of Test cross, back cross, multiple Alleles, non Epistatic Interactions and Epistasis Interaction.
F.Y.B.Sc. Sem II Course III USBO201	✓ This unit would allow learners to study about Structure life cycle, systematic position and alternation of generations in *Nephrolepis.* Learners will grasp the concept of Stelar evolution. ✓ Learner would understand about Structure life cycle systematic position and alternation of generations in

	Cycas. Learner would understand the Economic importance of Gymnosperms ✓ Learners would understand the details of Leaf: simple leaf, types of compound leaves, Incisions of leaf, venation, phyllotaxy, types of stipules, leaf apex, leaf margin, leaf base, leaf shapes. Modifications of leaf: spine, tendril, hooks, phyllode, pitcher, Drosera or insectivorous plants. Learner would understand the types of Inflorescence: Racemose: simple raceme, spike, catkin, spadix, and panicle. Cymose: monochasial, dichasial, polychasial. Compound: corymb, umbel, cyathium, capitulum, verticellaster, hypanthodium. And also understand the following families: Malvaceae, Amaryllidaceae
F.Y.B.Sc. Sem II Course IV USBO202	✓ Learner would understand the Simple tissue and complex tissues. Learner would understand the Primary structure of dicot and monocot root, stem and leaf. And also understand the epidermal tissue system: types of hair, monocot and dicot stomata. ✓ Learners will be able understand the concept of Photosynthesis: Light reactions, photolysis of water, photophosphorylation (cyclic and non cyclic), carbon fixation phase (C3, C4 and CAM pathways). ✓ Learner would understand the Concept of primary and secondary metabolites, difference between primary and secondary metabolites. Learner would understand the Grandma's pouch: Following plants have to be studies with respect to botanical source, part of the plant used, active constituents present and medicinal uses: *Oscimum sanctum, Adathodavasica, Zinziberofficinale, Curcuma longa, Santalum album, Aloe vera.*
S.Y.B.Sc. Sem III Course V USBO301	✓ Learner will understand the general characters, cell structure, range of thallus, and economic importance of **Thallophyta**: *Sargassum* Learner will understand the structure, external morphology, internal structure life cycle and alternation generation of **Bryophyta***: Anthoceros*and *Funeria*. ✓ Learner will understand the distinguish characters, systematic position and economic importance of the families of Leguminosae and its sub- family,

	AsteraceaAmaranthaceae and Palmae with the help of Bentham and Hooker's system. Learner will understand the history and rules of ICBN. And also understand the theory of anatomy in relation to anatomy, Cytology, Embryology, Palynology, Chemical constituents and Ecology. ✓ Learner will understand the methods of wet and dry preservation. Learner will understand the introduction, principle and working of microscope and its types. Learner will understand the principles of chromatography and its types.
S.Y.B.Sc. Sem III Course VI USBO302	✓ Learner would understand the ultra structure, origin and function of the Mitochondria, Peroxisomes, Glyoxysome and Ribosomes. Learner would be able to understand cell division and its significance, cell cycle, Mitosis and Meiosis. Learner would understand the Structure and function of DNA and RNA. Its types ✓ Learner would understand the theory of Chromosomal Abbrerations. Learner would understand the sex determination in heterogametic male, heterogametic female, in monocious, dioecious plants, in Drosophila. Learner will be able able to understand the concept of Lyon's hypothesis. Learner would understand the sex linked: eye colour in Drosophila, haemophilia, colour blindness, and sex influenced in baldness in man. And also understand the concept of Extracellular genetics. ✓ Learner would understand the mode of replication in prokaryotes and eukaryotes and molecular mechanism of replication. Learner would understand the principle of Messelson and Stahl Experiment. Learner would understand the process of Central Dogma.
S.Y.B.Sc. Sem III Course VII USBO303	✓ Learner would understand the introduction to pharmacognosy and phytochemistry. Learner would be sensitized to the feelings, what are adulterants and study of Monograph from pharmacopeia. Learner would understand the sources, properties, uses and adulterant of secondary Metabolites. ✓ Learner would understand the outline of types of forest in India and objective, methodology advantages and disadvantages of Agroforesty, Urban Farming and

	Silviculture. Learner would learn the types of fibers, spices and condiment and commercial market and industries. ✓ Learner would learn the introduction and uses of Aromatherapy and its examples. Learner would learn the Botanical and Nutraceuticals, types of enzymes and biofuel.
S.Y.B.Sc. Sem IV Course VIII USBO401	✓ Learner would understand the classification, general characters, cell structure, types of reproduction and alternation of generation of **Ascomycetae**: *Erysiphe, Xylaria*and economic importance. Learner would understand the symptoms, causative organism, disease cycle and control measures of powdery mildew and late blight of potato. Learner will understand the classification, structure, Method of reproduction, economic importance of Lichens. ✓ Learner would understand the classification, general characters, cell structure, and types of reproduction and alternation of generation of **Psilophyta and Lepidophyta**: *Selaginella.* Learner would understand the introduction to paleobotany includes the geological time scale, formation and types of fossils and structure and systematic position of genus*Rhynia.* ✓ Learner would understand the silent feature, classification and economics importance of Coniferophyta. And also understand the structure life cycle and systematic position of *Pinus* and *Cordaites.*
S.Y.B.Sc. Sem IV Course IX USBO402	✓ Learner would understand the Normal Secondary Growth in Dicotyledonous stem and root, Growth rings, periderm , lenticels, tyloses, heart wood sap wood. Learner would understand the Mechanical Tissues system and types of vascular bundles. ✓ Learner would understand the introduction to aerobic and anaerobic respiration. Learner would understand the concept of Photorespiration and photoperiodism and their types. Learner would understand the mechanism and application of vernalization. ✓ The learner would understand the biogeochemical cycles: Carbon, Nitrogen and Water. Learner would understand the concept of ecological factors and soil as an edaphic factor, soil composition, and types of

	soil, soil formation, and soil profile. And also study the quantitative and qualitative characters of community.
S.Y.B.Sc. Sem IV Course X USBO403	✓ Learner would understand the introduction to horticulture; branches of horticulture and location in garden, Learner would understand the types of garden and also understand the introduction to National park and Botanical garden and its importance. ✓ Learner would understand the introduction to plant tissue culture in this include laboratory organization and techniques in plant tissue culture, Totipotency, Organogenesis, Organ culture. Learner would comprehend the R-DNA technology includes Gene cloning, Enzyme involved in Gene cloning and vector used for gene cloning. ✓ Learner would gain knowledge of Biostatistics and concept of chi square test and coefficient of correlation. Learner would learn the techniques and information of bioinformatics and include Entrez, BLAST and bioinformatics programme in India.
T.Y.B.Sc. Sem V Course code USBO501	✓ Learners will apprehend the classification and general characters of Rhodophya, Chrysophyta and Bacillariophyta. ✓ The learners will understand the life cycle of Polysiphonia, Batrachospermum, Vaucheria and Pinnularia ✓ Learners will apprehend the classification and general characters of Basidiomycetes, Deuteromycetae and also the life cycle of AgaricusPuccinnia and Alternaria. ✓ Learner will apprehend thee disease causing organism in plant system. ✓ Learner will apprehend the types of microorganism and their cuture.
T.Y.B.Sc. Sem V Course code USBO502	✓ The learner shall understand the paleobotany and the fossils such as Lepdodendron, Lyginopteris, Pentoxylon and contribution of BirbalSahni in the field of Paleobotany. ✓ Learner will undersatand the palynology, and general characters of plant families ✓ Learner will know the anomalous growth in plants and

	types of stmata in different plants ✓ Learner will understand the types of pollen grain, their germination and application in honey industry.
T.Y.B.Sc. Sem V Course code USBO503	✓ Learner would uderstand the structure ad functions of different cell organelles. ✓ Learner will apprehend the role of water and mineral in growth and development of plants. ✓ Learer will know the process of bioremediation and how the toxicity can been reduced. ✓ Learner will know the application of biostatistics in research.
T.Y.B.Sc. Sem V Course code USBO504	✓ Learner will be able to understand the importance of natural antioxidants, mushroom industry ✓ Learner will apprehend the application of plant tissue culture. ✓ Learner will understand the working principals of important instruments used in the field of biology. ✓ Learner will understand the cultivation practices of important medicinal plants and their uses.
T.Y.B.Sc. Sem VI Course code USBO601	✓ Learner shall understand the general characters and life cycle of bryophytes, pteridophytes. ✓ Learner will apprehend the techniques and application of genetic engineering.
T.Y.B.Sc. Sem VI Course code USBO602	✓ Learners will understand the classification Gnetopsida and life cycle of Gnetum and Ephedra. ✓ Learner will know the general characters of plant families ✓ Learner will understand the anatomical adaptation in plants. ✓ Learners will understand the development of embryo in plants.
T.Y.B.Sc. Sem VI Course code USBO603	✓ The learner shall understand the structure of biomolecules, mode of enzyme action ✓ Learner will understand Nitrogen metabolism. ✓ Learner will understand the genetic mapping, gene mutation and metabolic disorders. ✓ Learner will know the application of bioinformatic.
T.Y.B.Sc. Sem VI Course code	✓ Learner shall understand the DNA sequencing. ✓ Learner will understand plant biodiversity and

USBO604	distribution of different types of forest. ✓ Learners will know the economic importance of medicinal and aromatic plants, its cultivation and extraction process. ✓ Learners will know the preservation technique of fruits and vegetables.
T.Y.B.Sc. Sem V Course code USACHO501	✓ Learner will understand the branches and objective of Horticulture, cosutancy etc. ✓ Learner will know different methods Propagation techniques. ✓ Learner will know the application of plant tissue culture in floriculture. ✓ Learner will know the organic and inorganic fertilizers. ✓ Learner will apprehend the operational and management skills of garden.
T.Y.B.Sc. Sem VI Course code USACHO601	✓ Learner will know the principals of garden design, different cultivation practices such as hydroponics, terrarium, dish garden. ✓ Learner will know different types of gardens ✓ Learner will know the green house technology and scope of floriculture. ✓ Learner will know the process of cultivation of medicinal and aromatic plants, fruit crops. ✓ Learner will apprehend the post harvest technology and entrepreneurship in horticulture.

1) BMS

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	**Outcome**
Fybms/Intro to financial Accounts	✓ To understand distinctive features and principles of accounting.
Business law	✓ To understand distinctive features, principles of contract Act, company Act, Negotiable instruments Act and intellectual property rights.
Business statistics Business Communication Foundation course	✓ To understand distinctive features and principles, of measures of central tendency, probability and decision theory and various statistical tools. ✓ To understand increasing significance of business communication and it's implications in business and various other sectors. ✓ To develop understanding of multi cultural diversity of Indian society .To get familiarized with philosophy and structure of Indian constitution. And develop understanding of significant aspects and Indian political process.
Foundation of Human Skills Business Economics	✓ To develop understanding of individual and group ✓ behavior, personal attitude, thinking learn and perception ✓ To get acquainted with economic concepts. To develop understanding of demand analysis .To understand cost and production analysis and market structure and pricing practices.

SYBMS/Business planning and Entrepreneurship Management Accounting For Managerial Decision Information Technology in Business Management Advertising Consumer behavior Strategic Management	✓ This course introduces entrepreneurship to budding managers ✓ To develop entrepreneurs and to prepare students to take the responsibility of full line of management function of a company with special reference to SME sector ✓ To acquaint management learners with basic accounting fundamentals. . ✓ To develop financial analysis skills among learners. To learn basic concepts of IT, its support and role in management. To understand basic concepts of Email, internet and websites, domains and security therein. To understand and examine the growing importance of advertisement To understand the construction of an effective advertisement To understand the future and career in advertising. To develop an understanding about the consumer Decision making and its application in marketing function of firms To equip undergraduate students the basic knowledge about issues and dimensions of consumer behavior .

	To understand the nature and importance of Business policy and strategy To acquaint the students business environment and SWOT analysis. To understand models of strategy making.
Tybms/logistics and supply chain management Corporate communication and public Relations Service Marketing E E-commerce and digital marketing Sales and Distribution Management Customer Relationship Management	✓ To provide students with basic understanding of concepts of logistics and supply chain management. To introduce students to the key activities performed by the logistics function To understand global trends in logistics and supply chain management. ✓ To provide students with the basic understanding of the concepts of corporate communication and public relations management. To introduce the various elements of corporate communication and consider role in managing organization. ✓ To understand distinctive features of services and key elements in service marketing. To understand marketing of different services in Indian context. ✓ To understand increasing significance of E e-commerce and it's applications in business and various other sectors. To understand Latest Trends and Practices in E E-commerce and digital marketing, along with its challenges and opportunities for the organization. ✓ To develop understanding of the processes in organizations. To get acquainted with concepts approaches and practical aspects of the key decision making variables in sales management and distribution channel management. ✓ To understand concepts of customer relationship management and implementation of Customer Relationship Management. To understand new trends

	in customer relationship management, challenges and opportunities for the organizations.

1) **Computer Science**

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course:B.SC Computer Science	**Outcome**
SEMESTER 1 : Computer Organization and Design	1) To learn about how computer systems work and underlying principles 2) To understand the basics of digital electronics needed for computers
Programming with Python- I	1) Students should be able to develop logic for Problem Solving. 2) Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc. 3) Students should be able to apply the problem solving skills using syntactically simple language i.e. Python (version: 3.X or higher)
Free and Open-source Software	1) Upon completion of this course, students should have a good working knowledge of Open Source ecosystem, its use, impact and importance. 2) This course shall help student to learn Open Source methodologies, case studies with real life examples.
Database Systems	1) Students should be able to evaluate business information problem and find the requirements of a problem in terms of data. 2) Students should be able to design the database schema with the use of appropriate data types for storage of data in database. 3) Students should be able to create, manipulate, query and back up the databases
Discrete Mathematics	1) To provide overview of theory of discrete objects, starting with relations and partially ordered sets. 2) Study about recurrence relations, generating function and operations

	on them. 3) Give an understanding of graphs and trees, which are widely used in software. 4) Provide basic knowledge about models of automata theory and the corresponding formal languages.
Descriptive Statistics and Introduction to Probability	1) Enable learners to know descriptive statistical concepts 2) Enable study of probability concept required for Computer learners
Soft Skills Development	1) To know about various aspects of soft skills and learn ways to develop personality 2) Understand the importance and type of communication in personal and professional environment. 3) To provide insight into much needed technical and non-technical qualities in career planning. 4) Learn about Leadership, team building, decision making and stress management
SEMESTER 2 : Programming with C	1) Students should be able to write, compile and debug programs in C language. 2) Students should be able to use different data types in a computer program. 3) Students should be able to design programs involving decision structures, loops and functions. 4) Students should be able to explain the difference between call by value and call by reference 5) Students should be able to understand the dynamics of memory by the use of pointers. 6) Students should be able to use different data structures and create/update basic data files.
Programming with Python – II	1) Students should be able to understand how to read/write to files using python. 2) Students should be able to catch their own errors that happen during execution of programs. 3) Students should get an introduction to the concept of pattern matching. 4) Students should be made familiar with the concepts of GUI controls and designing GUI applications. 5) Students should be able to connect to the database to move

	the data to/from the application. 6) 6)Students should know how to connect to computers, read from URL and send email.
Linux	1) Upon completion of this course, students should have a good working knowledge of Linux, from both a graphical and command line perspective, allowing them to easily use any Linux distribution. 2) This course shall help student to learn advanced subjects in computer science practically. 3) Student shall be able to progress as a Developer or Linux System Administrator using the acquired skill set.
Data Structures	1) Learn about Data structures, its types and significance in computing 2) Explore about Abstract Data types and its implementation 3) Ability to program various applications using different data structure in Python
Calculus	1) Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions. 2) Ability to appreciate real world applications which uses these concepts. 3) Skill to formulate a problem through Mathematical modeling and simulation.
Statistical Methods and Testing of Hypothesis	1) Enable learners to know descriptive statistical concepts 2) Enable study of probability concept required for Computer learners
Green Technologies	1) Learn about green IT can be achieved in and by hardware, software, network communication and data center operations. 2) Understand the strategies, frameworks, processes and management of green IT
SEMESTER 3: Theory of Computation	1. Understand Grammar and Languages 2. Learn about Automata theory and its application in Language Design 3. Learn about Turing Machines and Pushdown Automata 4.

	Understand Linear Bound Automata and its applications
Core Java	1. Object oriented programming concepts using Java. 2. Knowledge of input, its processing and getting suitable output. 3. Understand, design, implement and evaluate classes and applets. 4. Knowledge and implementation of AWT package.
Operating System	1. To provide a understanding of operating system, its structures and functioning 2. Develop and master understanding of algorithms used by operating systems for various purposes
Database Management Systems	1. Master concepts of stored procedure and triggers and its use. 2. Learn about using PL/SQL for data management 3. Understand concepts and implementations of transaction management and crash recovery
Combinatorics and Graph Theory	1. Appreciate beauty of combinatorics and how combinatorial problems naturally arise in many settings. 2. Understand the combinatorial features in real world situations and Computer Science applications. 3. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts and apply them to solve problems
Physical Computing and IoT Programming	1. Enable learners to understand System On Chip Architectures. 2. Introduction and preparing Raspberry Pi with hardware and installation. 3. Learn physical interfaces and electronics of Raspberry Pi and program them using practical's 4. Learn how to make consumer grade IoT safe and secure with proper use of protocols.
Web Programming	1. To design valid, well-formed, scalable, and meaningful pages using emerging

	technologies. 2. Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites 3. To develop and implement client-side and server-side scripting language programs. 4. To develop and implement Database Driven Websites. 5. Design and apply XML to create a markup language for data and document centric applications
Semester IV: Fundamentals of Algorithms	1. Understand the concepts of algorithms for designing good program 2. Implement algorithms using Python
Advanced Java	1) Understand the concepts related to Java Technology 2) Explore and understand use of Java Server Programming
Computer networks	1. Learner will be able to understand the concepts of networking, which are important for them to be known as a 'networking professionals'. 2. Useful to proceed with industrial requirements and International vendor certifications.
Software Engineering	1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. 2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors 3. an ability to communicate effectively with a range of audiences 4. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives 5. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

Linear Algebra Using Python	1. Appreciate the relevance of linear algebra in the field of computer science. 2. Understand the concepts through program implementation 3. Instill a computational thinking while learning linear algebra.
.NET Technologies	Understand the .NET framework 2. Develop a proficiency in the C# programming language 3. Proficiently develop ASP.NET web applications using C# 4. Use ADO.NET for data persistence in a web application
Android Developer Fundamentals	1) Understand the requirements of Mobile programming environment. 2) Learn about basic methods, tools and techniques for developing Apps 3) Explore and practice App development on Android Platform 4) Develop working prototypes of working systems for various uses in daily lives.
Semester V: Linux Server Administration	1)Learner will be able to develop Linux based systems and maintain. 2) Learner will be able to install appropriate service on Linux server as per requirement. 3) Learner will have proficiency in Linux server administration.
Software Testing and Quality Assurance	1) Understand various software testing methods and strategies. 2) Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. 3) Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.
Information and Network Security	1) Understand the principles and practices of cryptographic techniques. 2) Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. 3) Understand various protocols for network

	security to protect against the threats in a network
Architecting of IoT	1) Learners are able to design & develop IoT Devices. 2) They should also be aware of the evolving world of M2M Communications and IoT analytics.
Game Programming	1) Learner should study Graphics and gamming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community and learn.
Semester VI: Wireless Sensor Networks and Mobile Communication	1) After completion of this course, learner should be able to list various applications of wireless sensor networks, describe the concepts, protocols, design, implementation and use of wireless sensor networks. 2) Also implement and evaluate new ideas for solving wireless sensor network design issues.
Cyber Forensics	1) The student will be able to plan and prepare for all stages of an investigation - detection, initial response and management interaction, investigate various media to collect evidence, report them in a way that would be acceptable in the court of law.
Information Retrieval	1) After completion of this course, learner should get an understanding of the field of information retrieval and its relationship to search engines. 2) It will give the learner an understanding to apply information retrieval models.
Digital Image Processing	1) Learner should review the fundamental concepts of a digital image processing system. 2) Analyze the images in the frequency domain using various transforms. 3) Evaluate the techniques for image enhancement and image segmentation. 4) Apply various compression techniques. They will be familiar with basic image processing techniques for solving real problems.

Ethical Hacking	1) Learner will know to identify security vulnerabilities and weaknesses in the target applications. 2) They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines

1) **Information Technology**

Programme outcomes, program specific outcomes, and course outcomes offered:

Name of the programme/course	Outcome
BSc (IT)	The B.Sc. Information Technology programme was started in 2001 with an aim to make the students employable and impart industry oriented training. The main objectives of the course are: - to think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems. - to apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes. - to be capable of managing complex IT projects with consideration of the human, financial and environmental factors. - to work effectively as a part of a team to achieve a common stated goal. - to adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct. - to communicate effectively with a range of audiences both technical and non-technical. - to develop an aptitude to engage in continuing professional development. The new syllabus is aimed to achieve the objectives. The syllabus spanning three years covers the industry relevant courses. The students will be ready for the jobs available in different fields like: - Software Development (Programming) - Website Development - Mobile app development - Embedded Systems Programming - Embedded Systems Development - Software Testing - Networking - Database Administration - System Administration

	- Cyber Law Consultant - GIS (Geographic Information Systems) - IT Service Desk - Security - And many others The students will also be trained in communication skills and green computing.
course outcomes :	
F.Y.BSc (IT)	
Imperative Programming	In **computer** science, **imperative programming** is a **programming** paradigm that uses statements that change a program's state. In much the same way that the **imperative** mood in natural **languages** expresses commands, an **imperative** program consists of commands for the **computer** to perform
Digital Electronics	At the end of the course, a student will be able to: 1. Convert different type of codes and number systems which are used in digital communication and computer systems. 2. Employ the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency. 3. Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods. 4. Apply the fundamental knowledge of analog and digital electronics to get different types analog to digitalized signal and vice-versa converters in real world with different changing circumstances. 5. Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.
Operating system	To gain knowledge on distributed ***operating system*** concepts that includes architecture, ***output***,

	inter process communication, network structure, security.
DISCRETE MATHEMATICS	To appreciate the basic principles of Boolean algebra, Logic, Set theory, - Permutations and combinations and Graph Theory. - Be able to construct simple mathematical proofs - Be able to understand logical arguments and logical constructs. Have a better - understanding of sets, functions, and relations. -Acquire ability to describe computer programs in a formal mathematical manner
Communication Skills	Students will develop knowledge, ***skills***, and judgment around human ***communication*** that facilitate their ability to work collaboratively with others. Such ***skills*** could include ***communication*** competencies such as managing conflict, understanding small group processes, active listening, appropriate self-disclosure, etc
Object Oriented Programming	- Understand the features of C++ supporting object oriented programming - Understand the relative merits of C++ as an object oriented programming language - Understand how to produce object-oriented software using C++ - Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism - Understand advanced features of C++ specifically stream I/O, templates and operator overloading
Microprocessor Architecture	1. Assess and solve basic binary math operationsusing the microprocessor and explain the microprocessor's and Microcontroller's internal architecture and its operation within the area of manufacturing and performance. 2. Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor

	and microcontroller. 3. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements. 4. Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller. 5. Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices. 6. Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.
Web Programming	- design dynamic websites that meet specified needs and interests. - write well-structured, easily maintained, standards-compliant, accessible HTML code. - write well-structured, easily maintained, standards-compliant CSS code to present HTML pages in different ways. - use JavaScript to add dynamic content to pages.
Numerical and Statistical Methods	- Use a range of standard numerical methods to solve complex engineering problems - Graphical presentation of data
Green Computing	- Discuss Green IT with its different dimensions and Strategies. - Describe Green devices and hardware along with its green software methodologies. - Discuss the various green enterprise activities, functions and their role with IT.
SYBSC IT	

Python Programming	- To understand why Python is a useful scripting language for developers. - To learn how to design and program Python applications. - To learn how to use lists, tuples, and dictionaries in Python programs. - To learn how to identify Python object types.
Data Structures	-Select appropriate data structures as applied to specified problem definition. - Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures. - Students will be able to implement Linear and Non-Linear data structures. - Implement appropriate sorting/searching technique for given problem. - Design advance data structure using NonLinear data structure. - Determine and analyze the complexity of given Algorithms.
Computer Networks	- Independently understand basic computer network technology. - Understand and explain Data Communications System and its components. - Identify the different types of network topologies and protocols.
Database Management Systems	- Master the basic concepts and appreciate the applications of database systems. - Master the basics of SQL and construct queries using SQL. - Be familiar with a commercial relational database system (Oracle) by writing SQL using the system. - Be familiar with the relational database theory, and be able to write relational algebra expressions for queries.
Applied Mathematics	- Apply mathematical concepts and principles to perform computations

	- Apply mathematics to solve problems -Create, use and analyze graphical representations of mathematical relationships
Mobile Programming	- Install and configure Android application ***development***tools. - Design and develop user Interfaces for the Android platform. Save state information across important operating system events. - Apply Java ***programming*** concepts to Android application ***development***.
Core Java	- knowledge of the structure and model of the Java programming language, (knowledge) - use the Java programming language for various programming technologies (understanding) - develop software in the Java programming language, (application) - evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
Introduction to Embedded Systems	- 1. Foster ability to understand the internal architecture and interfacing of different peripheral ***devices*** with Microcontrollers. - 2. Foster ability to write the programs for microcontroller. 3. Foster ability to understand the role of ***embedded systems*** in industry.
Computer Oriented Statistical Techniques	Floating point representation of numbers, Arithmetic operations with normalized floating point numbers and their consequences, Error in number representation
Software Engineering	1. Basic knowledge and understanding of the analysis

	and design of complex systems. 2. Ability to apply software engineering principles and techniques. 3. Ability to develop, maintain and evaluate large-scale software systems. 4. To produce efficient, reliable, robust and cost-effective software solutions.
Computer Graphics and Animation	To train the students to acquire skills in generating marketable computer graphics and animated pictures, especially in the area of advertisements. To train the students to acquire skills and mastery in the use of different software producing graphics and animation. To impart real-life advertisement exposure in an organization/PTC (Production cum Training centre) under OJT.
TYBSc (IT)	
Software Project Management	This module is to prepare students for undertaking large ***software projects..... Subject*** Specific Intellectual and Research Skills.... and client-side code; Evaluate the ***outcome*** of implementing security measures in server-side and client-side code
Internet of Things	- Understand the concepts of Internet of Things -Analyze basic protocols in wireless sensor network - Design IoT applications in different domain and be able to analyze their performance -Implement basic IoT applications on embedded platform
Advanced Web Programming	1) apply three-tier architecture concepts and advanced database techniques in web applications 2) use object-oriented techniques in Web programming 3) develop rich interactive environments for the Web 4) create sites that utilize data validation techniques and secure code

	5) build sites that use session management
Artificial Intelligence	-An ability to apply knowledge of computing and mathematics appropriate to the discipline. - An ability to analyze a problem and identify and define the computing requirements appropriate to its solution. -An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
Enterprise Java	- Identify advance concepts of java programming with database connectivity. - Design and develop platform independent applications using a variety of component based frameworks - Able to implement the concepts of Hibernate, XML& EJB for building enterprise applications.
Software Quality Assurance	- know the definition of quality, cost of quality, quality model; b) -apply white-box testing, black-box testing, and inspection techniques - know how test tools can be used in the testing life cycle - use testing metrics for product and process;
Security in Computing	- identify some of the factors driving the need for network security - identify and classify particular examples of attacks - define the terms vulnerability, threat and attack - identify physical points of vulnerability in simple networks
Business Intelligence	-Identify the major frameworks of computerized decision support: decision support systems (DSS), data analytics and business intelligence (BI). -Explain the foundations, definitions, and capabilities of DSS, data analytics and BI. -List the definitions, concepts, and architectures of data warehousing.

Principles of Geographic Information	- will be able to generate information from earth observation and GIS data to support the study and visualization of processes in system Earth and the related role of human beings. - In addition to a providing a strong theoretical basis, students will also develop practical skills in the capture and analysis of spatial data and the visualization of the resulting information

Maharashtra college of arts, science and commerce

Mumbai-40008

Affiliated to university of Mumbai

Objectives and Course Outcome of M.Com

M.Com Sem: I

Strategic Management: The objectives of the course are

- To enable the learners to understand new forms of Strategic Management concepts and their use in business
- To provide information pertaining to Business, Corporate and Global Reforms
- To develop learning and analytical skills of the learners to enable them to solve cases and to provide strategic solutions
- To acquaint the learners with recent developments and trends in the business corporate world.

Course Outcome:

- Describe the practical and integrative model of strategic management process that defines basic activities in strategic management
- Demonstrate the knowledge and abilities in formulating strategies and strategic plans
- Analyze the competitive situation and strategic dilemma in dealing with dynamic global business environment in terms of rapidly changing market trends and technological advancement
- Evaluate challenges faced by managers in implementing and evaluating strategies based on the nature of business, industry, and cultural differences

Economics for Business Decision: The objectives of the course are

- This course is designed to equip the students with basic tools of economic theory and its practical applications
- The course aims at familiarizing the students with the understanding of the economic aspects of current affairs and thereby prepares them to analyse the market behavior with economic way of thinking.
- In addition to providing an insight into application of economic principles in business decisions, it also intends to widen analytical ability of the students and to provide them a foundation for further study of economics
- In order to make the study practical oriented, the paper requires discussion of some cases involving the use of concepts of business economics.

Course Outcome:

The Learner will be able to:

- Ability to forecast demand in light of changing circumstances and to formulate business plans.
- Ability to chalk out Business Policies.
- Knowledge about Profit Planning and control.
- Skill to analyze effects of Government Policies.
- Understand the different theories in Economics
- Apply the theory in real business scenarios
- Understand the economic issues and problems faced by organization.

Cost and Management Accounting: The objectives of the course are

- To enhance the abilities of learners to develop the concept of Cost and management accounting and its significance in the business
- To enable the learners to understand, develop and apply the techniques of costing in the decision making in the business corporates
- To enable the learners in understanding, developing, preparing and presenting the financial report in the business corporates.

Course Outcome:

- It helps in Understanding the Relationship Between Cost Accounting-Financial Accounting and Managerial Accounting.
- It Evaluate The Concept Of Management Accounting
- Helps to Understand The Importance Of Management Accounting For Businesses
- Computation of Fixed, Variable, Semi-Fixed And Semi-Variable Cost Concepts
- Analyzes The Relationship Between The Cost-Volume And Profit
- Understanding of Break-Even Sales Price, Break-Even Sales Volume, The Total Contribution Margin, The Unit Contribution Margin, Margin Of Safety, Security Ratio, Profit Margin Concepts
- Understanding and computing of Budgeting And Operating Budgets Concepts
- Computation of Standard Variation Analysis Through Standard Costs
- Understanding and calculation of Standard Cost Concept

Business Ethics and Corporate Social Responsibility: The objectives of the course are

- To familiarize the learners with the concept and relevance of Business Ethics in the modern era.
- To enable learners to understand the scope and complexity of Corporate Social responsibility in the global and Indian context

Course Outcome:

After completion of this course Learner will be able to

- Recognize legal and ethical issues when making business decisions
- gain an enhanced understanding of various ethical rules and ethical constraints
- Improve analytical problem solving and ethical decision making skills.
- understand the moral and social responsibility dimensions of corporate governance
- Explore the relationship between ethics and business and the subsequent theories of justice and economics across different cultural traditions.

M.Com Sem-II

Research Methodology for Business: The objectives of the course are

- To enhance the abilities of learners to undertake research in business & social sciences.
- To enable the learners to understand, develop and apply the fundamental skills in formulating research problems.
- To enable the learners in understanding and developing the most appropriate methodology for their research.
- To make the learners familiar with the basic statistical tools and techniques applicable for research.

Course Outcome:

After completion of this course Learner will be able to

- Formulate Research Problem and hypothesis
- Framing of suitable instruments and execute the sampling for data collection.
- Apply suitable statistical tools for research studies and its computations using Excel and SPSS.
- Organize and conduct research project in more appropriate manner

Macro Economics Concepts and Applications: The objectives of the course are

- The heavily application-oriented nature of macroeconomics course is introduced in order to enable the learners to grasp fully the theoretical rationale behind policies at the country as well as corporate level.
- This course the learners to receive a firm grounding on the basic macroeconomic concepts that strengthen analysis of crucial economic policies.
- Learners are expected to regularly read suggested current readings and related articles in the dailies and journals are analysed class rooms.

Course Outcome:

The Learner will be able to:

- Understand the meaning of Macro- economic with special reference to Circular Flow of Income, National Income Concepts and the numerical on National Income and GDP Deflator, theory of multiplier.
- Understand the role of financial system, money supply, demand and inflation.
- Learning the concept of Public revenue and expenditure, public debt and concept of deficits.
- Understand constituency of Fiscal Policy and concept Fiscal responsibility and budget management.

Corporate Finance: The objectives of the course are

- To enhance the abilities of learners to develop the objectives of Financial Management.
- To enable the learners to understand, develop and apply the techniques of investment in the financial decision making in the business corporates.
- To enhance the abilities of learners to analyse the financial statements.

Course Outcome:

- Motivates Students To Do Research Work In The Field Of Finance.
- Motivates Students To Pursue Higher Studies Like Chartered Accountancy, Cost Accountancy, MBA In Finance, Company Secretary, Diploma Courses In Accountancy, ACCA (Association Of Chartered Certified Accountants) Etc.
- Enhances Students Communication Skills, Social Skills, and Computer Skills As Well. This Programme Also Updates Students with Financial Management and Business Finance.
- enables student to understand The Corporate finance contents and tools.
- explain the role of finance in an organization in practical way.
- understand explain and analyses the interrelationship between finance and governance
- understand the relationship between strategic decision making and corporate financing decisions.

E-Commerce: The objectives of the course are

- To provide an analytical framework to understand the emerging world of e-commerce.
- To make the learners familiar with current challenges and issues in ecommerce.
- To develop the understanding of the learners towards various business models.
- To enable to understand the Web- based Commerce and equip the learners to assess e-commerce requirements of a business.
- To develop understanding of learners relating to Legal and Regulatory Environment and Security issues of E-commerce

Course Outcome:

- Impart the students with higher level knowledge and understanding of contemporary trends in e-commerce and business finance.
- To provide adequate knowledge and understanding about E-commerce practices to the students.
- Learners will be able to recognize features and roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react appropriately when confronted with critical decision making

M.Com Sem-III

Advanced Financial Accounting

Course Objectives

- To make the students aware of Indian banking system.
- Students are enabled with the Knowledge in the practical applications of accounting.
- To acquaint them to gain an insight into the functioning and role of financial institutions in the Indian Economy.
- To know the structure of finance related areas.
- The student will get thorough knowledge on the accounting practice prevailing in Banking & Insurance aspects.
- To enables students to understand the reforms and other developments in the Indian Banking.
- To impart knowledge about functions and role of Reserve Bank of India.
- To find out the technical expertise in maintaining the books of accounts related to Foreign Currency Conversion As-13

Course Outcomes

The student will be able to:

- Create the awareness of Indian banking system.
- Understand the reforms and other developments in the Indian Banking.
- Insight into the functions and role of Reserve Bank of India.
- Identify events that need to be recorded in the Final Account of Banking Company and Their Schedules
- Develop the skill of recording financial transactions and preparation of reports in accordance with Banking & Insurance Act.
- Describe the techniques relating to co-operative Society
- Equip with the knowledge of accounting process and preparation of final accounts of Foreign Currency Conversion As-13
- Identify and analyze the reasons for the difference between Banking and Insurance

Advanced cost accounting

Course Objectives

- The objective of the course is to equip the students with the ability to analysis interpret and use advanced cost accounting information in practical decision making. The course aims at explaining the core concepts of advanced cost accounting & its importance in managing a business.
- To study the costing concept and methods
- To know the ABC costing, Responsibility Accounting & process costing with normal and abnormal loss
- To update the Strategic Cost Management.

Course Outcomes

- This course provides the students an understanding of the application of advanced cost accounting techniques for management such as single output costing, process costing, cost allocation, ABC costing, Responsibility Accounting & Strategic Cost Management etc.
- The student is expected to have a good working knowledge of the subject.
- Students learn about cost accounting for cost management, planning and control through budgetary control and variance analysis through activity based costing.
- Students acquire decision making skill in cost accounting to the level where he or she can function effectively as a professional.

Direct Tax

Course Objectives

- To make the students understand the basic concepts, definitions and terms related to direct taxation.
- To make the students understand the concept of residential status thus making them understand the scope of total income for an assesses with different kinds of residential status.
- To make students understand the various heads under which income can be earned in India. To make students understand the procedure for computation of income under various heads namely income from salaries, house property, business/ profession, capital gains and income from other sources.
- To help the students to understand the various deductions under Chap VI-A of the Income tax act, 1961.
- To make the students determine the net total taxable income of an assesses after reducing the deductions from the gross total income earned from all or either of the five heads of income and also to compute tax based on slab rates.
- To help the students understand the computation of income and tax for a partnership firm.

Course Outcomes

- Students will be able to identify the technical terms related to direct taxation.
- Students should be able to determine the residential status of an assessee and thus should be able to compute the taxable income of assessee with different residential status.
- Students will be able to compute income from salaries, house property, business/profession, capital gains and income from other sources.
- Students will be able to understand the various benefits/ deductions under Chap VI-A of the Income tax act, 1961 which are to be reduced from the gross total income of the assessee.
- Students will be able to compute the net total income and the total tax liability of an individual assessee considering the income from all heads of income and the deduction under Chap VI- A of the Income tax act,1961.
- Students will be able to compute the taxable income and tax for partnership firm

M.Com Sem-IV

Financial Management

Course Objectives

- To introduce the students about the importance of Finance Management for a business.
- To enable them to understand the various modes and techniques of managing the financial resources of an organization.
- To know about the various factors to be considered while planning for financial policies.
- To acquaint the students regarding the various types of decisions taken by financial managers in current competitive environment.
- To enable students to select an investment project out of alternative investment proposals.

Course Outcomes

- Learners are made aware of the skill to manage financial resources of a company.
- Learners understand the various sources of finance available to businessmen these days.
- Ability to select an investment proposal by analyzing the compounded and discounted value of money invested.
- Learners are made aware of the importance of Capital Budgeting and different techniques of capital budgeting for decision making.
- Learners understand the concept of working capital, cash management, receivable management, inventory management and its requirements and control policies.
- Learners understand the concept of budgetary control its importance, limitations and preparation of different types of budget.
- Learners understand the concept of strategic financial management, financial decision making and financial planning process.

Corporate Financial Accounting

Course Objectives:

- To study the basic concepts of corporate accounting.
- To understand the proceedings of the preparation of consolidated balance sheet
- To get an idea about Green accounting, Double accounts, Farm accounts, voyage accounts, and liquidation proceedings of companies
- To give a detailed view of legal provisions regarding calculation of Value of Shares.
- To explain the concept of divisible profits and its implications in various accounting procedures.
- To give a comprehensive view of legal provisions governing audit of Companies and its various kinds.
- To prepare the final accounts of companies.
- To know the liquidator's final statement of accounts

Course Outcomes:

The Learner will be able to:

- Calculate Goodwill, evaluate shares adopting different methods and preparation of final accounts of Indian Companies.

- Understanding of the provisions regarding the appointment, qualifications, duties and liabilities of auditor.
- Clarity about the applicability of different methods of valuation of Goodwill & shares.
- Understand the consolidated financial statement • understand the proceedings of the preparation of consolidated balance sheet.

Indirect Tax (GST)

Objectives:

- To give an understanding of the relevant provisions of Goods & Service Tax.
- To acquaint the students with basic principles underlying the provisions of indirect tax laws and to develop a broad understanding of the tax laws and accepted tax practices.
- Expose the participants to real life situations involving taxation and to equip them with techniques for taking tax-sensitive decisions.
- To define various aspect of indirect taxes (GST) like, Registration, Concept of Supply etc.
- Students will acquaint with the sources of revenues of the government.
- Students will learn to analyze and evaluate the effect of an indirect tax on consumers, producers and the government.
- Student will learn to differentiate between GST and VAT.

Course Outcomes:

- Acquire conceptual knowledge of Indirect Tax.
- Understand the importance of indirect taxes (GST) in the Indian and global economy and its contribution to the economic development.
- Understand the implications of GST on the taxable capacity consumers, dealers and of the society at large and its changes.
- Learners able to be a tax consultant in preparing the tax planning, tax management. Payment of tax and filing of tax returns.
- Student will able to Identify and analyze the procedural aspects under different applicable statutes related to indirect taxation.
- Student will able to Understand the basic principles underlying the Indirect Taxation Statutes (with reference to Goods & Service Tax Act 2017).
- Student will able to examine the method of tax credit. Inflows and outflows, tax imposition, tax exemption, tax deduction, Delivery of goods and services, Tax rates, Periodic tax returns. Place of delivery of goods and services and its impact on GST.
- By the end of the course students will be able to describe how the provisions in the corporate tax laws can be used for tax planning.

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Programme: M.Sc. Subject: Information Technology

Learning Outcomes:

- It is expected to improvise the soft skill, technical knowledge as well as hardware skills for the students. To keep them connected with latest changes in the field of Information Technology, new subject is introduced.
- Demonstrate a comprehensive understanding of the broad themes in Information Technology.
- Use and apply current technical concepts and practices in the core information technologies of networking, data management, software engineering, computer security.
- Demonstrate a deep understanding of the IT methodologies and frameworks used to solve complex computing problems related to at least one IT Body-of-Knowledge
- Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
- Effectively integrate IT-based solutions into the user environment.
- Developed and implement optimal solutions to complex computing problems using industry-recognized best practices and standards.
- Apply ethical decision making in the development, implementation, and management of IT systems

Program Outcome

1. Demonstrate a deep understanding of the fundamental concepts, theories, and practices in information technology.
2. Apply critical thinking and problem-solving skills to develop innovative solutions to real-world IT challenges.
3. Analyze and evaluate the impact of emerging technologies on various industries and organizations.
4. Demonstrate proficiency in programming languages, software engineering principles, database design and administration, and network security.
5. Conduct independent research and produce scholarly work that contributes to the field of information technology.
6. Effectively communicate technical information to both technical and non-technical audiences.
7. Collaborate effectively with team members from diverse backgrounds and disciplines.
8. Demonstrate ethical and professional conduct in all aspects of their work in information technology.

PART 1

Program Specific Outcomes

1. PSO1: Ability to apply the knowledge of Information Technology with recent trends aligned with research and industry.
2. PSO2: Ability to apply IT in the field of Computational Research, Soft Computing, Big Data Analytics, Data Science, Image Processing, Artificial Intelligence, Networking and Cloud Computing.
3. PSO3: Ability to provide socially acceptable technical solutions in the domains of Information Security, Machine Learning, Internet of Things and Embedded System, Infrastructure Services as specializations.
4. PSO4: Ability to apply the knowledge of Intellectual Property Rights, Cyber Laws and Cyber Forensics and various standards in interest of National Security and Integrity along with IT Industry.
5. PSO5: Ability to write effective project reports, research publications and content development and to work in multidisciplinary environment in the context of changing technologies.

Program Objective

1. To be able to conduct business research with an understanding of all the latest theories.
2. To develop the ability to explore research techniques used for solving any real world or innovate problem.
3. Develop in depth understanding of the key technologies in data science and business analytics: data mining, machine learning, visualization techniques, predictive modeling, and statistics
4. Practice problem analysis and decision-making. Gain practical, hands-on experience with statistics programming languages and big data tools through coursework and applied research experiences.
5. To learn how to use Cloud Services.
6. To implement Virtualization.
7. To implement Task Scheduling algorithms.
8. Apply Map-Reduce concept to applications.
9. To build Private Cloud.
10. Broadly educate to know the impact of engineering on legal and societal issues involved

Course Outcome

A learner will be able to:

- solve real world problems with scientific approach.
- develop analytical skills by applying scientific methods.
- recognize, understand and apply the language, theory and models of the field of business analytics
- foster an ability to critically analyze, synthesize and solve complex.
- unstructured business problems.
- understand and critically apply the concepts and methods of business analytics.
- identify, model and solve decision problems in different settings.
- interpret results/solutions and identify appropriate courses of action for a given managerial situation whether a problem or an opportunity.
- create viable solutions to decision making problems.
- Apply quantitative modeling and data analysis techniques to the solution of real world business problems, communicate findings, and effectively present results using data visualization techniques.
- Recognize and analyze ethical issues in business related to intellectual property, data security, integrity, and privacy.
- Apply ethical practices in everyday business activities and make well reasoned ethical business and data management decisions.
- Demonstrate knowledge of statistical data analysis techniques utilized in business decision making.
- Apply principles of Data Science to the analysis of business problems.
- Use data mining software to solve real-world problems.
- Employ cutting edge tools and technologies to analyze Big Data.
- Apply algorithms to build machine intelligence.
- Demonstrate use of team work, leadership skills, decision making and organization theory.

Programme: M.Sc. Subject: Information Technology

PART 2

Programme Specific Outcomes

1. PSO1: Effectively communicating computing concepts and solutions to bridge the gap between computing industry experts and business leaders to create and initiate innovation
2. PSO2: Effectively utilizing their knowledge of computing principles and mathematical theory to develop sustainable solutions to current and future computing problems.
3. PSO3: Exhibiting their computing expertise within the computing community through corporate leadership, entrepreneurship, and/or advanced graduate study.
4. PSO4: Developing and implementing solution based systems and/or processes that address issues and/or improve existing systems within in a computing based industry.
5. PSO5: Information on Emerging Trends: Give information about software design and development practices to develop software applications in emerging areas such as Cloud and High performance computing, Data analytics and Cyber security.
6. PSO6: Successful Career and Entrepreneurship: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

COURSE OUTCOME

1. CO1: Develop technical documents that meet the requirements with standard guidelines. Understanding the essentials and hands-on learning about effective Website Development.
2. CO2: Write Better Quality Content Which Ranks faster at Search Engines. Build effective Social Media Pages.
3. CO3: Evaluate the essentials parameters of effective Social Media Pages.
4. CO4: Understand importance of innovation and entrepreneurship.
5. CO5: Analyze research and development projects.
6. CO6: be able to understand the fundamentals concepts of expert system and its applications.
7. CO7: be able to use probability and concept of fuzzy sets for solving AI based problems.
8. CO8: be able to understand the applications of Machine Learning. The learner can also apply fuzzy system for solving problems.
9. CO9: learner will be able to apply to understand the applications of genetic algorithms in different problems related to artificial intelligence.
10. CO10: A learner can use knowledge representation techniques in natural language processing.
11. CO11: Understand the basics of computer vision.

12. CO12: Understand and analyse various structure form motion and various estimates of Dense Motion.
13. CO13: Apply various motion models to images and understand computation photography techniques.
14. CO14: Apply Epipolar geometry , Rectification and various other 3D correspondence and Stereo reconstruction techniques.
15. CO5: Understand image-based rendering and reconstruction
16. CO16: Understand various introductory techniques of malware analysis and creating the testing environment
17. CO17: Perform advanced dynamic analysis and recognize constructs in assembly code.
18. CO18: Perform Reverse Engineering using OLLYDBG and WINDBG and study the behavioursand functions of malware
19. CO19: Understand data encoding, various techniques for anti-disassembly and anti-debugging
20. CO20: Understand various anti virtual machine techniques and perform shellcode analysis of various languages along with x64 architecture.
21. CO21: Understand the mechanism of business process and can provide the solution in an optimize way.
22. CO22: Understand the features use for interacting with database plugins.
23. CO23: Use the plug-ins and other controls used for process automation.
24. CO24: Use and handle the different events, debugging and managing the errors.
25. CO25: Test and deploy the automated process.
26. CO26: The students would understand the structure of a blockchain and why/when it is better than a simple distributed database.
27. CO27: Analyze the incentive structure in a blockchain based system and critically assess its functions, benefits and vulnerabilities
28. CO28: Evaluate the setting where a blockchain based structure may be applied, its potential and its limitations
29. CO29: Understand what constitutes a “smart” contract, what are its legal implications and what it can and cannot do, now and in the near future
30. CO30: Develop blockchain DApps
31. CO31: Investigate the cyber forensics with standard operating procedures.
32. CO32: Recover the data from the hard disk with legal procedure.
33. CO33: To recover and analyse the data using forensics tool
34. CO34: Acquire the knowledge of network analysis and use it for analysing the internet attacks.
35. CO35: Able to investigate internet frauds done through various gadgets like mobile, laptops, tablets and become a forensic investigator.
36. CO36: Understand VMWare VSphere 67, Install ESXi and Configure VSphere Centre
37. CO37: Demonstrate the use of VSphere Update Manager and Create a VSphere Network
38. CO38: Understand VSphere Security, Create and configure storage devices and Perform configurations to ensure business continuity.
39. CO39: Demonstrate Resource allocation, Creating and managing virtual machine and the use of templates

40. CO40: Understand automation of vSphere and manage resource allocation

Program Objectives:

- This course aims to provide conceptual understanding of developing strong foundation in general writing, including research proposal and reports.
- It covers the technological developing skills for writing Article, Blog, E-Book, Commercial web Page design, Business Listing Press Release, E-Listing and Product Description.
- This course aims to provide conceptual understanding of innovation and entrepreneurship development.
- To explore the applied branches of artificial intelligence .
- To enable the learner to understand applications of artificial intelligence.
- To enable the student to solve the problem aligned with derived branches of artificial intelligence.
- To develop the student's understanding of the issues involved in trying to define and simulate perception.
- To familiarize the student with specific, well known computer vision methods, algorithms and results.
- To provide the student additional experience in the analysis and evaluation of complicated systems.
- To provide the student additional software development experience.
- To provide the student with paper and proposal writing experience.
- Possess the skills necessary to carry out independent analysis of modern malware samples using both static and dynamic analysis techniques.
- Have an intimate understanding of executable formats, Windows internals and API, and analysis techniques.
- Extract investigative leads from host and network-based indicators associated with a malicious program.
- Apply techniques and concepts to unpack, extract, decrypt, or bypass new anti-analysis techniques in future malware samples.
- Achieve proficiency with industry standard tools including IDA Pro, OllyDbg, WinDBG, PE Explorer, ProcMon etc.
- To make the students aware about the automation today in the industry.
- To make the students aware about the tools used for automation.
- To help the students automate a complete process.
- To provide conceptual understanding of the function of Blockchain as a method of securing distributed ledgers, how consensus on their contents is achieved, and the new applications that they enable.
- To cover the technological underpinnings of blockchain operations as distributed data structures and decision-making systems, their functionality and different architecture types.

- To provide a critical evaluation of existing “smart contract” capabilities and platforms, and examine their future directions, opportunities, risks and challenges.
- Explain laws relevant to computer forensics
- Seize digital evidence from pc systems.
- Recover data to be used as evidence
- Analyse data and reconstruct events.
- Explain how data may be concealed or hidden
- Identify the need for Server Virtualization
- Describe the components and features of vSphere 6.7 and ESXi
- Describe how VMware’s products help solve business and technical challenges with
- regard to Server Virtualization

Msc Botany

M.Sc. Sem. I Course PSBO101	✓ Learner will gain knowledge of Algae classification according to G.M.Smith. ✓ It helps to understand modern techniques of Algal culture and biofuel producing Algae. ✓ The learners will get understanding of fungal classification according to Alexopoulos and there spore bearing organs ✓ Learners will get applied knowledge of fungi in agriculture, forest and there different pathological aspects.
M.Sc. Sem. I Course PSBO102	✓ Helps to understand classification of gymnosperms upto orders according to the system proposed by C. J. Chamberlain and to know General characters; affinities and interrelationships of Cycadofilicales,
	Bennettitales and Cordaitales. ✓ Learners get knowledge of Origin and evolution of angiosperms; the primitive angiospermic flower; primitive and advanced character in angiosperms. ✓ Help to get hand on International Code of Botanical Nomenclature (I.C.B.N.) History and basic Principles and Principles for assessment of relationships, delimitation of taxa and attribution of rank. ✓ To understand Evolution, variation and speciation, Biosystematic categories, Biotypes and Ecotypes. different Concept of type function values of taxonomic characters like numerical taxonomy, chemotaxonomy, Molecular systematics.

M.Sc. Sem. I Course PSBO103	✓ To understand different photosynthesis in plants such as Regulation of C3, C4 and CAM pathways of photosynthesis: Role of light in the activation of dark phase enzymes, regulation of RUBISCO, PEPcase, light effect, modulators and coordination of light , dark phase. C4 Photosynthesis: inter and intra-cellular transport of metabolites, carbonic anhydrase, PEPcase, NADP-MDH and PPDK. Regulation of CAM through transport of metabolites. 2. Pentose Phosphate Pathway and its importance. ✓ To get hand on Photosynthesis of prokaryotes: Pigment systems in bacteria and Cyanobacteria, light harvesting mechanisms, reductive TCA cycle. ✓ Learners will understand Proteins: Primary, secondary, tertiary and quaternary structural features and their analysis – Theoretical and experimental; protein folding – biophysical and cellular aspects. ✓ Learners get proper knowledge of Plant hormones: Biosynthesis, storage, breakdown and transport
M.Sc. Sem. I Course PSBO104	✓ To understand Cell division and cell cycle: Steps in cell cycle and control of cell cycle. ✓ Learners will get understanding of Molecular basis of transformation, transduction, Conjugation; fine structure of the gene, T4 Phage, complementation analysis, deletion mapping, cis-trans tests. ✓ New techniques of Recombinant DNA Technology Vectors in gene cloning: pUC19, phage, cosmid, BAC and YAC vectors. High and low copy number

	plasmids and its regulation. ✓ Proper knowledge of Applications of Recombinant DNA technology Application of recombinant DNA technology for production of herbicide resistant plants, insect resistant plants, improving seed storage proteins and golden rice.
M.Sc. Sem. II Course PSBO201	✓ Lerners will understand Classification of Bryophyta, upto orders, according to the system proposed by G.M.Smith, Alternation of generation in Bryophyta. ✓ Origin and evolution of Bryophyta with reference to habitat and form, evolution of the Sporophyte in Bryophyta ✓ To understand different Classification of Pteridophyta, upto orders, according to the system proposed by G.M.Smith. The geological time scale and a study of fossil Pteridophytes (Rhinia, Horneophyton, Lepidodendron, Calamites, Cladoxylon, Sphenophyllales, Coenopteridales) and economic importance of Pteridophytes; cultivation and maintenance of ornamental Ferns.
M.Sc. Sem. II Course PSBO202	✓ Learners will understand Anatomyof Meristems, Definition type of meristems, apical cell theory, histogen theory and Tunica corpus theory and Sensory and tactile tissue system: Tactile sense organs, gravitational and optical sense organs. ✓ To understand Morphogenesis and organogenesis in plants, Organization of shoot and root apical meristems; shoot and root development, leaf development and phyllotaxy; transition of flowering, floral meristems and floral development in Arabidopsis and Antirrhinum. ✓ Learners will understand Male gametophyte: Pollen development and gene expression male sterility sperm dimorphism and hybrid seed production; pollen tube growth and guidance; pollen storage; pollen embryos. Female gametophyte; Types of embryo sacs; structure of embryo sac cells. ✓ To understand Pollination, pollen-pistil interaction and fertilization: floral characteristics. Mechanism of Pollination and Fertilization: vectors involved in pollination; breeding system; commercial

	considerations, structure of the pistil; pollen-stigma interactions, sporophytic and gametophyticselfincompatibility (cytological, biochemical and molecular aspects); double fertilization; in vitro fertilization. ✓ Lerners will understand Seed development and fruit growth; endosperm development during Early, Maturation and Desiccation stages; embryogenesis, ultrastructure andnucellar cytology; cell lineage during late embryo development; storage proteins of endosperm and embryo; apomixis; embryo culture; dynamics of fruit growth; biochemistry and molecular biology of fruit maturation. ✓ Learners will have knowledge of Special relationships of pollen grain in pollen tetrads and Pollen wall morphogenesis, ultrastructure, primexin formation, Pollen proteins and allergen.
M.Sc. Sem. II Course PSBO203	✓ Learners will have knowledge of Physiology and biochemistry of seed germination mobilization of food reserves, germination and growth factors, seed dormancy, control and release of dormancy. Responses of plants to biotic (pathogen and insects) and abiotic (water, temperature and salt) stresses; mechanism of resistance to biotic stress and tolerance to abiotic stress. ✓ To understand different environmental factors like Physical environment; biotic environment; biotic and abiotic interactions. Habitat and Niche: concept of habitat and niche; niche width and overlap; fundamental and realized niche; resource partitioning; character displacement. ✓ Learners will know Characteristics of a population; population growth curves; population regulation; life history strategies (r and K selection); concept of metapopulation – demes and dispersal, interdemic extinctions, age structured population. ✓ To understand Species interactions: types of interactions, interspecific competition, herbivory, carnivory, pollination and symbiosis. Major terrestrial biomes, theory of island biogeography; biogeographical zones of India. Environmental

	Botany- Present concern: Conservation of genetic resources, gene pools land races, Global warming and costal ecosystems. Depletion of forest cover, threats to mangroves. Urbanization and plant cover
M.Sc. Sem. II Course PSBO204	✓ Learners will understand medicinal property of plants Biological source, geographical distribution, physicochemical analysis of Tylophoraasthmatica (leaf), Fennel and Plantago (fruit/seed), Cinnamon and Holarrhena (bark) and Acorus (rhizome) and Tinospora root. Uses of Essential oils (Cinnamon, Eucalyptus and Citronella) fatty oil (Sesame, Safflower and coconut). Vegetable fat (Cocum butter and Mahua butter) And Medicinal uses of the above ✓ Learners will know Dietetics Therapeutic value of Indian plant foods :-a) rice wheat ; b) gram , green gram c) lemon, grapes and bananas; d) ginger, turmeric, coriander, garlic, asafoetida, cumin and clove. Plant food in the treatment of diseases - anorexia, arthritis constipation, diarrhoea, diabetes, exhaustion, hypertension, memory and piles.
M.Sc. Sem. III Course PSBO301	✓ Learners will understand different Biostatistics, Hypothesis testing: Theory of errors – Type I and Type II errors, Null Hypothesis, z-test, Test of significance. Introduction to ANOVA, One-way &two-way ANOVA, Dunett's test. Randomized Block Design and Latin Square. (5 problems to be solved in each category), Bioinformatics. Organization of biological data, databases (raw and processed), Queering in data bases. Gene finding, motif finding and multiple sequence alignment. Protein sequence analysis (theory and algorithms). Exploration of databases, retrieval of desired data, BLAST etc , pH and Buffers; Electrophoresis , pH and buffer solutions, acids and bases, hydrogen ion concentration, dissociation of acids and bases, measurement of pH, titration curves. Physiological Buffers. , Electrophoresis: Theory and application, PAGE (Native & SDS) and AGE , 2D Electrophoresis and Microscopy & Spectroscopy role Principles, instrumentation, working and applications of o Fluorescence microscope, TEM, SEM, Biological

	sample preparation for electron microscopy o IR, AAS , Plasma Emission spectroscopy, NMR, MS.
M.Sc. Sem. III Course PSBO302	✓ Learners will understand Molecular details of DNA replication in prokaryotes and eukaryotes. Assembly of raw DNA into nucleosomes. DNA recombination, hollidaymodel for recombination. Transcription, RNA synthesis, classes of RNA and the genes that code for them. Transcription of protein coding genes, prokaryotes and eukaryotes, mRNA molecule. Transcription of other genes, ribosomal RNA, and ribosomes, tRNA. RNA processing, Capping, polyadenylation, splicing, introns and exons. snRNA, Types of snRNA, snRNA in spliceosome, significance of snRNA, Non coding RNAs, ribozyme, riboswitches, RNA localization. Translation of Protein structure, nature of genetic code, translation of genetic message and Post translational modifications, localization, chaperons.
M.Sc. Sem. III Course PSBOMPP303	✓ Learners will understand History of Mycology and Plant Pathology in India and contribution of Mycologists and Plant Pathologists: o C J. Alexopoulos o E. A. Bessey o K. S. Bilgrami o E. A. Butler o K. S. Thind o M. N. Kamat o R. N. Tendon. Soil Mycology: o Various techniques to determine the fungal population in soil. o Various interactions amongst the soil fungi and other organisms. o Keratinophillic fungi ✓ To understand Fungal Taxonomy & Life history and Systematic position of fungi Fungal Taxonomy: A comparative account of outline systems of classification of fungi proposed by Bessey and Ainsworth. Polyphasic taxonomy- morphology, enzymatic and molecular characteristics of class Ascomycetes and Basidiomycetes. Life cycle and Systematic position of the following fungi: Myxomycetes: Physarumpolycephalum, Ascomycetes:Clavicepspurpurea Basidiomycetes: Ganoderma ✓ Different Fungal Physiology with Mode of nutrition- Saprophytic, parasitic, mutualistic, hyperparasitic, predaceous. Nutrition in fungi with reference to: i)

	Carbon ii) Sulphur iii) Potassium iv) Magnesium v) Nicotinic acid vi) Riboflavin, vi)Nitrogen, vii) Phosphorus, viii) Thiamine ix) Folic acid x) Pantothenic acid xi) Iron Melvonate pathway, Shikimic acid pathway ✓ Learners will know about Fungal Cytology, and Ecology Fungal Cytology: Microscopic structure of fungal cell, Chemical composition and functional attributes of fungal septa and cell wall. Fungal Ecology: A) Physical Environmental factors influencing fungal growth: i) Light ii) Hydrostatic pressure iii) Radiations.
M.Sc. Sem. III Course PSBOMPP304	✓ Learners will understand Pathogenesis and Crop Pathology Prepenetration, Penetration and entry of pathogen into host tissue – mechanical, physiological, enzymatic and through natural openings • Host-parasite interaction • enzymes and toxins in pathogenesis • Significance of phyllosphere and rhizosphere fungi • Crop Pathology: Causal organism, Symptoms, Disease Cycle and Control measures of the following diseases i) Wart of potato ii) Downy mildew of grapes iii) Bunt of rice iv) Citrus canker ✓ To understand SeedMycoflora& Seed Pathology Seed Mycoflora: Fungi on seeds- a) Field Fungi b) Storage Fungi – i) Characteristics of major storage fungi ii) Effect of storage fungi iii) Control of storage fungi , Seed Pathology: Pathological Effects of Seed borne diseases- i) Seed abortion ii) Shrunken seeds & Reduced seed size iii) Seed rot iii) Sclerotisation&Stromatisation iv) Seed discolouration v) Reduced or complete loss of germinability ✓ Learners will know Cultural Studies and Food borne Fungi which includes Cultural Studies in Fungi: Culture Media and their types based on i) Empirical use ii) Physical states iii) Chemical composition • Food borne fungi: Common contaminants of i) Fresh food, ii) Processed food iii) Stored food • Use of chemical preservatives to protect the food against contamination 1 Unit IV: Industrial Mycology • Fungal enzymes, extraction and purification • Industrial application of fungal enzymes – i) Protease

	ii) Cellulase iii) Invertase iv) Phosphatase • Uses of immobilization technique in fermentation by fungi • Fermenters- design and construction, types of fermenters, aseptic operation and use of computer in fermenters, maintenance, types of fermentation process - batch fermentation, fed-batch fermentation, continuous fermentation, scale up of fermentations, industrial processes- upstream and down-stream processes, strain improvement of microbes • Organic Acid Industry - Sources and methods of production of vinegar, and citric acid.
M.Sc. Sem. IV Course PSBO401	✓ Learners will understand Centrifugation, Basics principle of Sedimentation, Types of rotors, Differential & density gradient centrifugation and Preparative centrifugation & Applications; Analytical centrifugation & applications. ✓ To understand Chromatographyits General Principle of chromatography. Techniques and applications of Ion exchange, Affinity Chromatography& HPLCand Application of HPTLC & HPLC in validation of herbal drugs. ✓ Tracer techniques & PCR and Pattern and rate of radioactive decay, Units of radioactivity, Stable Isotopes , Principle, instrumentation & technique: Geiger-Muller counter, Liquid scintillation counters & Autoradiography , Applications of isotopes in biology: Tracer techniques &Autoradiogrpahy, PCR and its applications 1 Unit IV: Nanotechnology & IPR , Synthesis of nanoparticles using biological samples. Characterization of nanoparticles (FTIR, SEM, TEM, STEM, Scanning Tunneling Microscope, Atomic Force Microscope, UV-Vis,). IPR: Objectives, process & scope.
M.Sc. Sem. IV Course PSBO402	✓ Learners will understand different Gene Regulation I, Regulations of gene expression in bacteria – trp operon, ara operon, histidine operon. Regulation of gene expression in bacteriophage λ. ✓ To understand Gene Regulation II , Control of gene expression in eukaryotes, Transcriptional control, RNA processing control, mRNA translocation control, mRNA degradation control, protein degradation

	control Gene Regulation III , Genetic regulation of development in Drosophila Developmental stages in Drosophila – embryonic development, imaginal discs, homeotic genes ✓ Learners will understand Cell signaling, Hormones and their receptors, cell surface receptor, intracellular receptor, signaling through G-protein coupled receptors, signal relay pathways-signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two-component systems, light signaling in plants, bacterial chemotaxis and quorum sensing. Forms of signalling (paracrine, synaptic, autocrine, endocrine, cell to cell contact).
M.Sc. Sem. IV Course PSBOMPP403	✓ Learners will know History of Mycology and Plant Pathology in India and contribution of Mycologists and Plant Pathologists:i) S. D. Garrett ii) K. C. Mehta iii) B. B. Mundkur iv) C. V. Subramanium v) T. S. Sadashivan vi) M. J. Thirumalachar vii) John Webster , Soil Mycology: Distribution of Mycoflora with relation to the soil factors - i) Texture ii) Moisture iii) Temperature iv) Aeration v) pH vi) Organic matter, Phosphate solubilizing fungi, Organic matter decomposition and humus formation, its importance in agriculture. ✓ To understand Fungal Taxonomy & Life history and Systematic position of fungi Fungal Taxonomy: A comparative account of systems of classification of fungi proposed by i) Smith ii) Martin ,Phyllogenetic system, ICBN, Basic Principles , major rules, effective and valid publications, Nomenclature of fungi , Life cycle and Systematic position of the following fungi: Phycomycetes: Saprolegnia Basidiomycetes: CyathusDeuteromycetes: Helminthosporium ✓ To understand characteristic Fungal Physiology, Fungal Metabolites: Acetate and Nitrogenous metabolites, Aromatic terpenes, Pigments in Fungi, Organic Acids from fungi , Fungi in Nanotechnology ,Fungal Genetics and Ecology and different Fungal Genetics: Study of fungal genetics with reference to – Nuclear behavior during cell division . i) Neurospora ii) Saccharomyces iii) Pucciniagraminis iv) Ustilago,Parasexual cycle, Heterokaryosis, Fungal

	Diversity: i) Fresh water fungi ii) Marine fungi iii) Coprophilous fungi iv) Aero-fungi Environmental factors influencing fungal growth: i) Humidity ii) Temperature , Fungal Diversity: Anamorphic fungi- i) Nematophagous fungi ii) Aquatic hyphomycetous fungi iii) Aero-aquatic fungi and Colonization strategies in fungi.
M.Sc. Sem. IV Course PSBOMPP404	✓ Learners will understand Pathogenesis and Crop Pathogeny Symptomology , Study of various symptoms of plant diseases caused by fungi. Defense mechanism in plants-Pre-existing structural and biochemical defense mechanisms, lack of essential nutrients. Induced structural and biochemical defense mechanisms, inactivation of pathogen enzymes and toxins, altered biosynthetic pathways. Plant disease management : Physical: Exclusion, eradication and protection. Chemical disease control:– common fungicides, antibiotics and nematicides. Biological disease control: Phytoalexins. Crop Pathology: Causal organism, Symptoms, Disease Cycle and Control measures of the following diseases; i) Club root of cabbage ii) Coffee Rust iii) Brown spot of rice iv) Papaya mosaic. Seed Mycoflora& Seed Pathology and Seed Mycoflora: Detection of Seed borne pathogens by- i) Washing test ii) Incubation method: a) Blotter method b) Agar plate method . Seed Pathology: Management of Seed borne diseases - i) Chemicals ii) Antibiotics iii) Biological control agents iv) Host – Resistance in disease management. Cultural Studies and Fungal Toxins , Cultural Studies in Fungi: Preservation techniques of fungal cultures – i) Sub-culturing ii) Storage under mineral oil iii) Storage in distilled water iv) Storage by drying v) Storage by freezing ✓ To understand Fungal Toxins: Mycotoxins- historical background, detection, estimation, effect on human /animal health. • Mycotoxins and their types i) Alternaria Toxins ii) Citrinin iii) Ochratoxins iv) Patolin v) Penicillic Acid vii) Sterigmatocystin viii) Zearalenone ✓ Learners will have knowledge of Industrial Mycology Fungal bio-conversions of Lignocellulose

	materials i) Lignocellulose ii) Potential bio-products and their applications , Fungal bioremediation , Food Industry- SCP single cell protien- advantages and disadvantages, production of yeast biomass, production of mycoproteins, traditional fungal foods (Shoyu, Miso, Sake, Tempeh)