Gokhale Education Society's,

Arts, Commerce & Science College, Jawhar,Palghar- 401 603, Maharashtra

• **Affiliated to University of Mumbai**	• **NAAC Reaccredited with B^{++} Grade**
• **"Best College Award" by University of Mumbai**	• **ISO 9001: 2015 Certified College**

Programme Specific Outcome

&

Course Outcome

2022-23

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1. Department of Economics

Bachelors of Arts

Programme Specific Outcomes

PSO1	Students will able to understand the basic concepts of economics.
PSO2	Students will learn the application of different concepts of economics in practical field.
PSO3	Students will able to appear in different fields of economics.
PSO4	Students can participate in various examinations linked to economics.

Course Outcomes Class: F.Y.B.A. (2019-20 (Economics)

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

CO1	Learners will understand the concepts of micro economics.
CO2	Learners will able to understand the ten principles of economics.
CO3	Learners will understand the structure of market, as well as demand and supply.
CO4	Learners will understand the nature of consumer's.

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

CO1	Learners will understand the process of production analysis.
CO2	Learners will get with the concepts of cost and Revenue analysis.
CO3	Learners will understand the details about factor pricing and their rewards.
CO4	Learners will understand equilibrium of different market structures.

Class: S.Y.B.A. 2020-21 (Economics) Semester III Course (Paper.: Macro Economics - II

CO1	Learners will learn about various types of income.
CO2	Learners will study the theories related to consumption.
CO3	Learners will learn the supply of money and demand for money.
CO4	Learners will understand the banking structure.

Course (Paper) Name and No.: Public Finance - III

CO1	Learners will understand the basic concepts of public finance.
CO2	Learners will get information about budget and tax structure.

CO3	Learners will know public expenditure and debt.
CO4	Learners will know the sources of income and ways to expenditure.

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

CO1	Learners will understand the detail concept of Inflation.
CO2	Learners will understand fiscal and monetary policies.
CO3	Learners will understand post Keynesian Economics.
CO4	Learners will understand external sector and different exchange rates.

Course (Paper) Name and No.: Indian Economy –III

CO1	Learners will know the introductory part of the Indian Economy.
CO2	Learners will understand the nature of agriculture sector of the Indian Economy.
CO3	Learners will get the details about industrial sector of India.
CO4	Learners will be able to know service sector of Indian Economy.

Class: T.Y.B.A. 2021-22 :(Economics)Semester V Course (Paper) Name and No.: ADVANCED MICROECONOMICS – III (Paper- VII)

CO1	Enables students to get knowledge on new market structure, imperfect competition.
CO2	Providing understanding on the Welfare economics and Information of Economics.

Course (Paper) Name and No.: ECONOMICS OF GROWTH AND DEVELOPMENT (Paper- VIII)

CO1	Enable students to apply and analyse issues in the development process.
CO2	Students will be able to identify the issues related to Growth and Development
CO3	Students will be able to understand the policy options and analyzed the Measures taken for theDevelopment of an economy.
CO4	Enable students to apply and analyse issues in the development process.

Course (Paper) Name and No.: Economics of Agriculture and cooperation I (Paper –IX)

CO1	Students will obtain information regarding various agricultural issues in India and remedies for it.
CO2	Making awareness about self- employment through various local business like agro-tourism, travelagents, horticulture, floriculture, fishery and animal husbandry.

Course (Paper) Name and No.: ENTREPRENEURSHIP & SMALL SCALEINDUSTRIES (PAPER- X)

CO1	Nurture the qualities of successful entrepreneurship
CO2	Provides them knowledge about various processers to register for small scale industries which resultsin successful maintenances of such industries

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

CO1	On the completion of this course, the student will have a good understanding of contemporaryenvironmental issues and their relation to economic development.
CO2	The learner will be equipped to understand the methodologies and tools of valuing the environment.
CO3	In the light of international environmental agreements, the learners will be able to understand theglobal approaches and policies adopted by India to deal with the environmental issues

Course (Paper) Name and No.: History of Economic Thought –I (Paper- XII)

CO1	Students will get information about the genesis of Economics and its modern scenario.
CO2	Establish the co-relation of Economics with other subjects.

Semester VI : Course (Paper) Name and No.: ADVANCED MACROECONOMICS- III (Paper –XIII)

CO1	To make students aware about Post Keynesian Synthesis and understand various aspects of TradeCycles.
CO2	Students will be able to describe the contemporary Exchange Rate Regimes and InternationalMonetary System.

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

CO1	Students will be able to understand the trade theories and determinants of trade which helps them toanalyze the international trade policies.
CO2	Students will be able to understand the role of various international institutions and trade blocks andtheir approaches in framing the policies for trade.

Course (Paper) Name and No.: Economics of Agriculture and cooperation-II (Paper –XV)

CO1	Students can understand the basic Principles of Cooperation, Globalization and Cooperation.
CO2	Provides information about co-operative Movement in India and its performance and role in ruraldevelopment.
CO3	Students get introduced to the problems and measures of agro industries and Cooperative farming andLeadership in cooperative development.

Course (Paper) Name and No.: RURAL DEVELOPMENT (PAPER- XVI)

CO1	On the completion of the course, the students will be able to understand the basic Concept of ruraldevelopment.
CO2	Learners will also be understanding objectives and importance of rural development.
CO3	Learners will have good understanding of problems in relation of rural development.
CO4	Learners will come to know what rural development programmes have initiated by the government toovercome the problems of rural development

Course (Paper) Name and No.: ENVIRONMENTAL ECONOMICS- II
(PAPER-XVII)

CO1	Students are empowered about the environmental challenges and the need for environmentalaccounting
CO2	Develop understanding on the policy measures to attain SDGs.

Course (Paper) Name and No.: HISTORY OF ECONOMIC THOUGHT-II
(PAPER-XVIII)

CO1	Students will get information about the genesis of Economics and its modern scenario.
CO2	Students get familiarized with the leading Indian economists who significantly contributed to thestream of Indian economic thought.

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

CO1	Learners will understand the difference between interregional and international trade.
CO2	Learners will understand the GATT, WTO and Doha round.
CO3	Learners will understand the international financial institutions and debt problem.
CO4	Learners will study the foreign capital flow in economy

Programme- B.Com: Programme Outcomes

PO1	After completing three years for Bachelors in Commerce (B.Com) programme, students would gain Knowledge in Business Economics and Labour Welfare and Practice.
PO2	Empowerment of learners through access to commerce education and enabling them to develop as intellectually active, socially responsible citizens always ready for continuous personal and professional growth to fit into the challenging business environment
PO3	Inculcate the element of research amongst the learners, to develop their overall personality

FYBCOM (2016-17)

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

CO1	Learners understand the basic tools to analyze the business economics.
CO2	Learners are able to understand the elasticity of demand forecasting.
CO3	Learners studied the theories related to production function.
CO4	Learners are now in a position to understand different concepts of costs

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

CO1	Learners get the knowledge of perfect competition and monopoly markets
CO2	Learners are now able to discriminate monopolistic competition and oligopoly markets.
CO3	Learners studied the different pricing practices adopted by the firm.
CO4	Students studied the theories capital budgeting.

SYBCOM (2017-18) Course (Paper) Name and No: Business Economics- Paper no. III

CO1	To understand the basic concepts of Macro Economics.
CO2	To understand certain common features of economic phenomenon in the real world.
CO3	To integrate the concepts of macroeconomics in order to analyze and understand thepolicies of the state
CO4	To integrate the concepts of macroeconomics in order to analyze and understand the functioning of the economy

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

CO1	To understand the basic concepts of public finance
CO2	To understand the role of state in an economy.
CO3	To know the fiscal policy of the state.
CO4	To understand the structure of fiscal federalism in India.

TYBCOM (2018-19) : Course (Paper) Name and No.: Business Economics- Paper no. V

CO1	Learners learn the overall macroeconomic environment in India.
CO2	Learners learn the policy structure in agriculture sector in India.
CO3	Learners learn the industry and services sector the Indian economy.
CO4	Learners studied the banking and financial markets in India.

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

CO1	Learners learn the theories international trade.
CO2	Learners learn various aspects of commercial policy.
CO3	Learners studied the structure of balance of payments and World trade Organization.
CO4	Learners studied the foreign exchange market.

Course (Paper) Name and No.: Labour Welfare and Practice - I

CO1	Learners learn the Concept of Labour Welfare.
CO2	Learners learn the Labour Legislations in India
CO3	Learners learn the Agencies of Labour welfare.
CO4	Learners studied Industrial Hygiene & Occupational Health

Course (Paper) Name and No.: Labour Welfare and Practice – II

CO1	Learners learn the Social Security
CO2	Learners learn Labour Markets
CO3	Learners studied Labour Force in India
CO4	Learners studied Globalization &Labour

Foundation Course: Course Outcomes

Class: F.Y. B.Com.Semester I Course (Paper) Name and No.: Foundation Course- I

CO1	To know about duties & responsibilities towards society
CO2	To aware about the socio-economic problems and diversified issues of society.
CO3	To impart knowledge of Globalization and make students aware about the problems in society.
CO4	To create awareness about the fundamental rights according to Indian Constitution
CO5	To study key Aspect of political Process

Semester II : Course (Paper) Name and No.: Foundation Course- II

CO1	The learners would be acquainted with the sectors of the Indian Economy and its basic facets.
CO2	To help learners grasp the idea of Fundamental Rights and Duties according to Indian Constitution.
CO3	This will inspire learners to understand and take care of our Mother Earth.
CO4	This will aid to identify the problems within humans in the contemporary society and ways to deal with it.
CO5	The learners will learn how to cope up with stress and deal with conflicts.

Semester III : Class: S.Y.B.Com. (2017-18): Foundation Course- III

CO1	Student will able to understand about Right of SC, ST, Women, children, & people with disabilities.
CO2	Learners will able to understand about Environmental disaster
CO3	To understand about various Science & technology and their uses
CO4	Student will able to understand about verbal & nonverbal communication, presentation skills.

Semester IV: Course (Paper) Name and No.: Foundation Course- IV

CO1	Student will able to understand consumer rights, right to information, protection of citizens and public service guarantee Act.
CO2	Learners will understand importance of ecology and various sustainable principle, poultry principle pay principle.
CO3	To understand application of various modern technologies.
CO4	Students will understand financial basic information on competitive examination, its pattern, eligibility criteria and local centres and soft skill required for such exam.

2. Department of English

Programme Outcome

1. The students graduated in English communicates in English, develop the skills of language specific uses in daily and practical life.
2. The students use his subject specific knowledge for interaction, discussion and talks on the learned content.
3. The students who graduated in English develop the skills of interpersonal communication and other professional skills.
4. The graduated students develop concepts of literature, theoretical perspectives, analyzes the texts and develop critical perspectives.

FYBA Optional English: Introduction to Prose and Fiction

Course Specific Outcomes: The students appreciates after completing the course successfully are able to do following

1. The students develop the prose reading skills and appreciation of texts on various perspectives.
2. The students appreciate the essays reading skills and appreciation of texts like they studied on various perspectives.
3. The students appreciates after completing the course successfully texts on various perspectives.
4. The students appreciate after completing the course successfully imbibes underlying philosophy of the texts on various perspectives.

SYBA Paper II: Introduction to Drama

Course Specific Outcomes: The students appreciate after completing the course successfully are able to do following

1. He develops interest and passion for drama (and theatre) furthermore he is be familiarized with the salient elements and characteristics of drama.
2. He is able to identify the different forms and types of drama as well as identify the various trends and characteristics of significant dramatic
3. He acknowledges movements through the representative dramas be equipped with the tools and techniques to critically appreciate drama.

4. He imbibes human values reflected in the selected plays applies critical perspectives.
5. He develops analytical skills and critical thinking through close reading of the representative dramas.

SYBA Paper III: Introduction to Poetry

Course Specific Outcomes: The students appreciate after completing the course successfully is able to do following

1. He / She identifies different genres and forms of poetry Identify poetic technique, style and rhetorical devices used in poetry
2. He / She appreciates poems by separating various component parts and investigating the relationship of the parts to the whole
3. The student demonstrates understanding of wide range of poems from different historical periods, written in a wide range of forms, styles and subject matter
4. He / She Identifies the major poets of world literature and define the importance of their works
5. The students enhance their cultural sensitivity through reading of representative poems from diverse cultural context
6. Students who perform satisfactory in expressing learned content, score good marks.

TYBA Paper IV: 16th to 18th Century English Literature

Course Specific Outcomes: The students appreciate after completing the course successfully is able to do following

1. He / She understand the distinctive features of English Literature of the 16th 17th and 18th century.
2. He / She appreciate the drama and poems by separating various components, parts and investigating the relationship of the parts to the whole.
3. He / She comprehend how background influences shaped the writer's thinking.
4. He / She recognize and appreciate the literary masters who dominated the scene.
5. The students grasped the different writing styles that each age adopted.

TYBA Paper V: Literary Criticism

Course Specific Outcomes: The students appreciate after completing the course successfully is able to do following

1. The student uses the important critical terms while analyzing literature.
2. The student thinks deep and critically while studying literature.

3. He/ She become aware about the nature and function of literature and criticism.
4. He / She impart the technique of close reading of literary texts.
5. He / She understand the various literary theories and critical approaches.
6. The students become familiar with the tenets of practical criticism.

TYBA Paper VI: Grammar and the Art of Writing

Course Specific Outcomes: The students appreciate after completing the course successfully is able to do following

1. The students have gained the basic understanding of Phonetics, Morphology and Word Transformation.
2. He/ She have improved speaking skills.
3. The students started using the speaking and writing according to the language rules.
4. The students have developed adequate knowledge of the rules of grammar, grammatical analysis and sentence transformation
5. He / She have learned to write effectively in various domains.

TYBA Paper VII: 19th Century English Literature

Course Specific Outcomes: The students appreciate after completing the course successfully is able to do following

1. The students learned to view literary works in their dynamic interface with the background
2. The students have gained the understanding the literature of the 19th century as a complex outcome of artistic, intellectual and socio-political cross-currents.
3. He / She identify the major poets of 19th century world literature and define the importance of their works.
4. The students have learned to contextualize the impulses behind the significant emergence of women writing in the 19th century.
5. The students started to learn and view the development of the Victorian Novel as informed by Victorian morality as well as by larger democratic processes.

TYBA Paper VIII: 20th Century British Literature

Course Specific Outcomes: The students appreciate after completing the course successfully is able to do following

1. The students have gained the understanding the literature of the 20th century British Literature as a complex outcome of artistic, intellectual and socio-political cross-currents.

2. The students become trained to develop skills for critical and analytical understanding of the text.
3. The students acquired the discipline to become reflective and imaginative thinkers through a close, critical and analytical reading of the prescribed texts.
4. The students have gained the understanding the valuable co-relation between the socio-cultural, economical and historical contexts; behind the literary production.

TYBA Paper IX: Drama and Theatre

Course Specific Outcomes: The students appreciate after completing the course successfully is able to do following

1. The students have understood the social and artistic movements that have shaped theatre and drama.
2. The students have read and get understood the prescribed drama.
3. The students enhance the understanding of applying discipline-specific skills to the creation of drama.
4. He / She analyzed the difference between the concepts of drama and theatre.
5. He/ She demonstrated the knowledge of history of drama and theatre as a literature and performing art.

3. Department of Marathi

Programme Specific Outcome

1. Marathi graduated students speak & write in usual Marathi language and read the Marathi reference material.
2. The students from the department appreciate all forms of art and literature from perspective.
3. The students from the department applies learnt language skills in other fields of knowledge like journalism, proofreading anchoring interview skills and correspondence
4. The graduated students develop skills for stage performances script writing.

Course Outcomes

Class: F. Y. B. A. (Marathi)
Semester I

Course (Paper) Name and No.: Marathi Compulsory

१. विद्यार्थ्यांमध्ये मराठी भाषा, साहित्य याबद्दल आवड निर्माण होईल.
२. विद्यार्थ्यांना दैनंदिन जीवनात ,व्यवहारात मराठी भाषेचा वापर अधिक निर्दोषपणे व आत्मविश्वासाने करता येईल .
३. विद्यार्थ्यांना विविध माध्यमांसाठी सर्जनशील लेखनाचे कौशल्य प्राप्त होईल.
४. कथा या साहित्य प्रकारची ओळख होईल.

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

१. साहित्याच्या अभ्यासाकडे वळणाऱ्या विद्यार्थ्यांना विशिष्ट साहित्य प्रकारांचे ज्ञान प्राप्त होईल.
२. विद्यार्थ्यांना साहित्य प्रकारांचे आकलन करून होईल.
३. विद्यार्थ्यांना नाटक म्हणजे काय, त्याचे घटक माहित होतील.
४. जेणेकरून ते भविष्यात नाटक, नाट्य समीक्षा लिहू शकतीलनाटकात , काम करू शकतील, नाटक बसवू शकतील.

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

१. कार्यालयीन कामकाजात विद्यार्थ्यांना मराठी भाषेचा वापर अचूकपणे करता येईल .
२. विद्यार्थ्यांना जाहिरात, जाहिरातीचे घटक, प्रकार इ. माहीत झाल्याने वर्तमानपत्रे, नियतकालिके यात जाहिरात क्षेत्रात काम करता येईल.

३. विद्यार्थ्यांची आकलनक्षमता वाढेल व त्यांचे सारांश विस्तार-तसेच कोणत्याही विषयावर निबंध लेखनाचे लेखनकौशल्य विकसित होईल.

४. विद्यार्थ्यांना काव्य या साहित्य प्रकाराची ओळख होईल व त्यांना काव्यवाचनाचे, लेखनाचे, सादरीकरणाचे महत्त्व कळेल.

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

१. विद्यार्थ्यांना ललित गद्य या विशिष्ट साहित्य प्रकारचे ज्ञान प्राप्त होईल.

२. यामुळे आपण आयुष्यात घेतलेले अनुभव, आपल्या आठवणी, प्रवास, चिंतन, वाचन हे लालित्यपूर्ण भाषेत आपणही लिहू शकतो, हे विद्यार्थ्यांना कळेल.

Semester III : Class: S. Y. B. A. (Marathi)

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

१. मराठी साहित्यातील कथन साहित्य अभ्यासून विद्यार्थ्यांना कथन साहित्याचे विश्लेषण करून मर्म ग्रहण करता येईल.

२. कथा, कादंबरी वाचताना कोणत्या दृष्टीने वाचावे याचे ज्ञान प्राप्त होईल.

Course (Paper) Name and No.: भाषा आणि बोली अभ्यास (Marathi Paper III)

१. मराठी भाषेचे स्वरूप समजेल.

२. मराठीच्या विविध बोलींचे ज्ञान होईल.

३. मराठी बोलीअभ्यासाला चालना मिळेल.

Semester IV: Course (Paper) Name and No.: नाट्य साहित्य (Marathi Paper II)

१. नाटक आणि एकांकिका या प्रकारांचे साहित्यिक स्वरूप लक्षात येईल.

२. नाट्यसाहित्याची वाटचाल समजेल.

३. नाट्य ज्ञान मिळून नाट्य रचना करता येईल.

Course (Paper) Name and No.: मराठी व्याकरण आणि लेखन कौशल्ये (Marathi Paper III)

१. भाषालेखन कौशल्य आत्मसात होईल.

२. मराठीचे लेखन कौशल्य प्राप्त होईल.

३. संगणकासाठी मराठी भाषेचा उपयोग होईल.

४. स्पर्धा परीक्षा उत्तीर्ण होण्यासाठी हा अभ्यासक्रम उपयुक्त ठरेल.

Semester V :Course (Paper) Name and No.: History of medieval Marathi literature (Marathi Paper IV)

१. प्राचीन मराठी वाङ्मयाच्या इतिहासाची माहिती होईल.

२. प्राचीन मराठी वाङ्मयाचे रचनाप्रकार समजतील.

३. मराठी भाषेबद्दल अभिमान निर्माण होईल.

Course (Paper) Name and No.: Indian Theory of literature (Marathi Paper V)

१. भारतीय साहित्य विचाराचा परिचय होईल.

२. भारतीय साहित्य आस्वादाची प्रक्रिया समजेल.

३. भारतीय साहित्याची निर्मिती प्रक्रिया व प्रयोजनांचा परिचय होईल.

Course (Paper) Name and No.: literature and Society (Marathi Paper VI)

१. साहित्य आणि समाज यांच्या अन्योन्य संबंधांचा परिचय होईल.

२. महानगरीय व ग्रामीण जाणीवेच्या साहित्याचा व समाजाचा अन्योन्य संबंध लक्षात येईल.

३. निवडक कलाकृतींच्या आधारे विविध वाङ्मयीन प्रवाहांचा परिचय होईल.

Course (Paper) Name and No.: Linguistic and Marathi Grammar (Marathi Paper VII)

१. भाषेच्या विविध अंगांचा परिचय होईल.

२. भाषेच्या अभ्यासाच्या आधुनिक व शास्त्रीय पद्धतींचा परिचय होईल.

Course (Paper) Name and No.: Modern Marathi literature (Marathi Paper VIII)

१. आधुनिकता वादाच्या वैशिष्ट्यांची ओळख होईल.

२. वाङ्मयीन प्रवृत्ती समजतील.

Course (Paper) Name and No.: Translation Skills (Marathi Paper IX)

१. भाषांतर विद्येबद्दल सूक्ष्म माहिती होईल.

२. भाषांतर कौशल्य प्राप्त होईल, त्यामुळे रोजगार संधी प्राप्त होईल.

Semester VI : Course (Paper) Name and No.: History of medieval Marathi literature (Marathi Paper IV)

१. शाहिरी वाङ्मयाचा परिचय होईल.

२. बखर वाङ्मयाचा परिचय होईल.

३. वेगवेगळ्या पंथांच्या वाङ्मयाचे स्वरूप लक्षात येईल.

४. वेगवेगळ्या धर्मीयांनी केलेल्या वाङ्मय निर्मितीचा परिचय होईल.

५. मध्ययुगीन वाङ्मयाचे स्वरूप स्पष्ट होईल.

Course (Paper) Name and No.: Western Theory of literature (Marathi Paper V)

१. पाश्चात्य साहित्य विचाराचा परिचय होईल.

२. पाश्चात्य साहित्याच्या निर्मिती प्रक्रिया व प्रयोजन विचाराचा परिचय होईल.

३. पाश्चात्य साहित्याच्या आस्वाद घेण्याच्या पद्धती समजतील.

Course (Paper) Name and No.: literature and Society (Marathi Paper VI)

१. सामाजिक स्थित्यंतरांचा मराठी साहित्यावर प्रभाव पडतो हे समजेल.

२. दलित साहित्याची निर्मितीप्रक्रिया समजेल.

३. स्त्रीवादी साहित्य आणि वाङ्मयीन प्रवृत्तींचे ज्ञान होईल.

Course (Paper) Name and No.: Marathi Grammar (Marathi Paper VII)

१. मराठी व्याकरण व्यवस्थेचा सूक्ष्म परिचय होईल.

२. मराठी व्याकरण व्यवस्थेचातील समस्या लक्षात येतील.

Course (Paper) Name and No.: Post Modern Marathi literature (Marathi Paper VIII)

१. उत्तर आधुनिकता वादाची वैशिष्ट्ये लक्षात येतील.

२. आधुनिकता वादाची स्वरूप वैशिष्ट्ये समजल्याने साहित्याकडे पाहण्याचा नवा दृष्टीकोन प्राप्त होईल

Course (Paper) Name and No.: Occupational Marathi (Marathi Paper IX)

१. विद्यार्थ्यांच्या लेखनक्षमतेचा आणि सर्जनशीलतेचा विकास होईल.

२. विविध माध्यमांसाठी आवश्यक लेखनाच्या प्रकारांचा परिचय होईल आणि त्यासाठी आवश्यक कौशल्ये आत्मसात होतील.

३. लेखन कौशल्ये आत्मसात करून माध्यमांमधील रोजगारांच्या संधी उपलब्ध होतील.

4. Rural Development

Programme Specific Outcomes

1. The student sensitized towards rural development issues and understands the relevancebetween program and social and rural and urban environment.
2. The student becomes responsible member for rural development.
3. The student identifies resources and foundations of rural development especially in agriculture and their management.
4. The student exposes himself to rural research education extension education and ruraladministration.
5. The student identifies rural laws related to revenue and rural administration.
6. The student identifies rural concepts of development based on agriculture and allied activities.

Course Outcomes : FYBA Paper 1

1. The student tells concepts related to rural development and reveals rural institutions ofsociety and identifies social changing factors.
2. The student knows institutions of rural economy and infrastructure and knows theconcepts of rural decentralization.
3. The student knows the issues of rural communities the student is land of syllabus content.

SYBA Paper II

1. The student of rural educational system is fully aware of concepts theories of socialchange and problems.
2. The student analyses policies related to agriculture and agriculture development.
3. The student knows the sources from rural parts of rural employment and identifies ruraltourism as an opportunity.

Paper III

1. The student identifies relevance of learning theories with district and taluka administration.
2. The student tells the revenue administration functions of laws and order administration.

3. The student understands and identifies planning machinery and reforms needed atplanning stage.
4. The student reveals the laws related to land reforms related to rural area and use of RTI.
5. The student finds linkages between administration and practical exposure.

TYBA : **Paper 4** (UARD 501 and 601)

1. The student identifies the importance, scope of Rural Development in rural India and reveals traditional and nontraditional services.
2. The student tells farm business management, nature, principles and practice of agricultural production.
3. The student finds linkages in modern techniques and rural development need of Green Revolution and sensitization for the rise of production.

Paper 5 (UARD 502 and 602)

1. The students identify financial institutions and nature and scope of rural marketing.
2. The students tell about marketing risks and areas of uncertainty and reveal agencies of marketing mediators and rural distribution chain.
3. The students reveal the knowledge of Rural Development Banks like NABARD, PCCS, DCCB, etc.
4. The student narrates the concepts of rural finance, problems and remedies.

Paper 6 (UARD 503 and 603)

1. The student grows self-reliant through self-employment based on agriculture.
2. The student Reveal agro-ecology and importance of mixed cropping and identifies opportunities in forestry in rural and agro-based industries.
3. The students see opportunities in animal husbandry, poultry, fishery and allied agro-products.

Paper 7 (UARD 504 and 604)

1. The student learner reveals rural resources, land reforms, land resources and water resources.
2. The sensitized student learner applies the problems and maximum utilization of resources.
3. The student learner tells human resource, concepts of rural infrastructure andapplication of technology, energy resources and management.

Paper 8 (UARD 505 and 605)

1. The students identify the causes and impact of rural urban imbalance.
2. The student reveals cooperative sector, nature and causes of failure of cooperative sectors.
3. The student reveals the impact of acquisition of land and causes of migration.
4. The student narrates the water pollution concepts, measures to control land pollution.
5. The student finds linkages in poverty and power theory.

Paper 9 (UARD 506 and 606)

1. The students identify voluntary sector and its importance in rural development.
2. The student tells the role of NGOs structure and function of NGOs the process of registration of voluntary organization.
3. The student relates the role of voluntary organization and its impact on social development and its relevance.

5. Commerce

Programme Specific Outcomes (PSO)

1. The commerce graduated students know finance skills, account uniting skills, auditing,Income tax related skills.
2. The commerce graduated students know banking and computer related skills.
3. The commerce students sensitized towards uses money, commercial and trade relatedtransactions and management skills.
4. The commerce students uses his learnt syllabus for future commerce education.

FYBCom Commerce Paper – I (CSO) International Business.

1. The students learns Business related skills, tells more about related with business.
2. The students tells related retail marketing, pricing and profit making skills manner usesinternet, e-banking skills, e-commerce.

S.Y. B.Com. Commerce Paper – II Advertising

1. The students tells & unites advertising in a skillful manner, practice various techniques ofadvertising, make than interesting.
2. The students uses learnt syllabus, concept and uses for post-graduate education,manner avails various job opportunities.

SYB.Com (Business Law)

1. The students tell Business related precautions, Micro- business related issues & ….
2. The student narrates knowledge about patent policy and urgencies.
3. The student uses right against consumer exploitation, under consumer protection act1986 and competition act 2020.

S.Y. B. Com. Management accounting:

1. The students uses auditing techniques, related to management, accounting procedure.
2. The students uses auditing techniques, uses knowledge for competitive exam. Andprepares documentation- procedure, maintains audit record.
3. The students uses skills for verification & valuation & assures & liabilities.

T.Y. B. Com. Commerce paper – V MHRM

1. The student uses marketing skill, techniques, process, demand & sale, profit, margins.

2. The student uses knowledge learnt in marketing, an lire marketing techniques.

MHRM Paper VI:

1. The students uses knowledge, personal skill, resource for his development,communication skills and in … skills development.
2. The student tells management of human resource and concepts related tomanagement.

Course outcome: F.Y. B.Com. Accounting:

1. The learner shows interest in accounting concepts, standard accounting policies, methodsof valuation to stock revenue recognition.
2. The learner prepares final accounts, departmental accounts and use accounting system for hire purchase.
3. The learner prepares incomplete records and prepares consignment accounts, branch accounts and shows knowledge to fire Insurance claim and calculation based on computer.

S.Y. B.Com. P- Accounting and financial management:

1. The learner prepares financial accounts, partnership final account, amalgamation of partnership firms and their accounts.
2. The learner calculates balance sheets, receipts and payments as per learned basics.

T.Y. B.Com. Paper-VII: Financial accounting and auditing-

1. Student learner prepares how company account is prepared, applied methods of accounting regarding internal reconstruction of Companies, buy back of shares investment account.
2. The learner follows ethical behavior and implications for accounting in practical life.
3. The learner enrolls for admission to higher course based on knowledge at graduate level.

Paper-III: Management functions and challenges-

1. The student learner narrates Management concepts and functions and uses in his lifeskills, takes concept of decision making and takes cautions.
2. The student learner applies management theories, approaches and thoughts in hisdecision making.
3. The student learner is a motivated leadership qualities and controlling techniques.
4. The student learner identifies and shows knowledge of various financial systems

and Institutions, shows keen interest in recent trends in finance.

Applied component (Entrepreneurship management and small scale industries)

1. The learner finds small scale industries, their nature, functions and significance; he shows keen interest to pursue a career in small-scale industries.
2. The learner is interested in entrepreneurship development and cautions in decision making while working on entrepreneurship project.
3. The learner shows interest in knowledge of project formulation, significance and contents of project report.
4. The learner belongs to rural area and interested to rural small scale industries and becomes capable to manage and handle small scale industries.

Paper-VIII: Financial accounting and cost accounting:

1. The learner follows various methods and applies methods of cost accounting.
2. The learner observes cost accounting, various types of cost accounting, applies knowledge to minimize cost.
3. The learner applies various methods of costing namely process costing, contract costing, standard costing and marginal costing.

6. Botany

Program Specific Outcome (B.Sc)

1. Students can recall details and information about the evolution, anatomy, morphology, systematics, genetics, physiology, ecology, and conservation of plants and all otherforms of life.
2. Students can recall details of the unique ecological and evolutionary features of the local and Indian flora.
3. Students recognize and identify major groups of non-vascular and vascular plants and their phylogenetic relationships.
4. Students understand the phylogeny of plants and study various systems of classification.
5. Students can explore the morphological, anatomical, embryological details as well as economic importance of algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
6. Students understand physiological processes and adaptations of plants.
7. Students provide knowledge about environmental factors and natural resources and their importance in sustainable development.
8. Students be able to carry out phytochemical analysis of plant extracts and application of the isolated compounds for treatment of diseases.
9. Students deal with all microbes and the technologies for their effective uses in industry and mitigation of environmental concerns.
10. Students explain how current medicinal practices are often based on indigenous plant knowledge and to get introduced to different perspectives on treating ailments according to ethnomedicinal principles.
11. Students understand patterns of heredity and variation among individuals, species and populations and apply principles for improvement of quality and yield.
12. Students acquire recently published knowledge in molecular biology, such as rDNA technology; PTC and bioinformatics and their applications.

F.Y.B.Sc.: Paper I : Course Outcomes

1. Observe and study General characteristics of Chlorophyta.
2. Impart knowledge of Structure, life cycle and systematic position of *Nostoc* and *Spirogyra*.
3. Enumerate economic importance of Algae.
4. Study General characteristics of Phycomycetes.
5. Impart knowledge of Structure, life cycle and systematic position of *Rhizopus* and *Aspergillus*.
6. Enumerate economic importance of Fungi.
7. To analyze mode of nutrition in Fungi.
8. Describe General characteristics of Hepaticeae.
9. Have knowledge of Structure, life cycle and systematic position of *Riccia.*
10. Make clear about structure, lifecycle, systematic position and alternation of generationof in *Nephrolepis*.
11. Throw light upon stellar evolution.
12. Describe structure, lifecycle, systematic position and alternation of generation of in *Cycas.*
13. Enumerate economic importance of Gymnosperms.
14. Have detail knowledge of leaf.
15. Analyze and distinguish detail study of inflorescence.
16. Compare and study plant families: Malvaceae and Amaryllidaceae.

Paper II: Course outcomes: The students develops the skills -

1. Characterize general structure of cell wall and plasma membrane of plant cell.
2. To get knowledge of ultra-structure of and functions of Endoplasmic reticulum andChloroplast.
3. Get clarify about energy pyramids and flow of energy in an ecosystem.
4. Acquire knowledge of Types of Ecosystems.
5. Specify and Explain words phenotype and genotype.
6. Understand Mendelian Genetics.
7. Elaborate test cross and back cross.
8. Explain mechanism of Epistatic and nonepistatic gene interactions.

9. Clarify Multiple alleles with suitable examples.
10. Observe and compare simple and complex plant tissues.
11. Get clarify about Primary structure of Dicot and Monocot root stem and leaf.
12. Inculcate knowledge of epidermal tissue system of plants.
13. Understand photosynthesis in detail.
14. Learn the concept of primary and secondary metabolites.
15. Relate grandma's pouch with respect to plant source, part used, active constituent andmedicinal uses of certain plants.

S.Y.B.Sc. SEMESTER III Paper – I : Course outcomes:

1. Observe and study General characteristics of Division Phaeophyta
2. Get idea about Structure, Life cycle and Systematic position of ***Sargassum*** **sp.**
3. Learn General account of Class Anthocerotae and Musci.
4. tells about Structure Life cycle & systematic position of ***Anthoceros*** **and** ***Funaria*****.**
5. Understand Plant Systematics Taxonomy in relation to Anatomy, Palynology, Chemicalconstituents, Embryology, Cytology and Ecology
6. Compare and study families such as **Leguminosae, Asteraceae, Amaranthaceae andPalmae.**
7. Discuss various preservation methods of plants.
8. Clarify and demonstrate Chromatography and electrophoresis techniques.
9. Understand thoroughly General characters of Ascomycetae.
10. Interpolation of Structure, life cycle and systematic position of *Erysiphe* and *Xylaria*.
11. Comprehends Plant pathology with respect to powdery mildew and late blight ofpotato.
12. Get idea about classification, structure, methods of reproduction, economic importanceand ecological significance of lichen.
13. Observe and study Salient feature and classification of Psilophyta and Lepidophyta.
14. Explain Structure, life cycle and systematic position of *Selaginella*.
15. Interpret Paleobotany
16. Apprehend structure and systematic position of form genus Rhynia.
17. Grasp Salient feature and classification and economic importance of Coniferophyta
18. Envisage Structure life cycle and systematic position of *Pinus*.

19. Discern Structure and systematic position of the form genus *Cordaites.*

Paper - II : Course outcomes:

1. Introduce Pharmacopoeias.

2. Throw light on Monograph from pharmacopoeia.

3. Comprehends Secondary metabolites

4. Describe Outline of types of forest in India.

5. Explain Operative types of Forestry.

6. Applications of Fibres and Current trends in Fiber industries.

7. Compare Spices and condiments and Commercial market of spices.

8. Understand the Aromatherapy.

9. Understand Application of Neutraceutical.

10. Give information of Enzyme Industry.

11. Explain the information about Biofuel.

12. Understand the UltraStructure and functions Mitochondrion, Peroxisomes, Glyoxysomes and Ribosomes.

13. Significance of Cell Division and Differences between Mitosis and Meiosis.

14. Describe Nucleic Acids.

15. Thrown light upon Chromosomal Aberrations.

16. Understand the mechanism of Sex determination, Sex linked, Sex influenced, and Sex-limited traits:

17. Illustrate Extra Nuclear genetics.

18. Understand complete process of DNA Replication.

19. Elaborate the Enzymes involved and molecular mechanism of DNA replication in Prokaryotes and Eukaryotes.

20. Learning the complete process of Protein Synthesis.

Paper - I: Course Outcomes:

1. Understand the Normal secondary growth in dicotyledonous stem and root.

2. Comment on Growth rings, periderm, lenticels, tyloses, heart wood and sap wood.

3. Observe and learn Mechanical tissue system.

4. Differentiate between Aerobic and anaerobic respiration.

5. Interpretation of photorespiration

6. State the concept of Photoperiodism and vernalization in plants

7. Compare and study Biogeochemical cycles.
8. Explain the role of Ecological factors.
9. Describe Concept of environmental factors
10. Explain soil as an edaphic factor.
11. Elaborate Community ecology.

Paper - II: Course Outcomes:

1. Introduce horticulture and Branches of Horticulture.
2. Explain the different locations of garden.
3. Describe Concept of Focal point of garden.
4. To study types of garden.
5. Generalize study of National park e.g. Sanjay Gandhi national park.
6. Concept of Botanical garden e.g. Veer Mata Jijabai Udyan.
7. Comprehend plant Tissue Culture.
8. Grasp r-DNA technology.
9. Learning Biostatistics: The chi square test and Correlation calculation of coefficient of correlation.
10. Interpret Bioinformatics.

T.Y.B.Sc. Paper – I: Course Outcomes: The students would be able :

1. To gain knowledge about microbial diversity and techniques for culturing and visualization.
2. To u nderstand the salient features of three major groups of algae, their life cyclepatterns with a suitable example; to be able to identify them.
3. To learn the general characteristics and classification of two major groups of fungi along with life cycles of each group; to be able to identify them.
4. To understand the scope and importance of Plant Pathology and apply the concepts of various control measures of commonly widespread plant diseases.
5. To identify, describe and study in detail the life cycles of three Bryophytes.
6. To and study in detail classification and general characters of three classes of Pteridophytes and identify as well as describe the life cycles of one example from each class.
7. To study evolutionary aspects and economic utilization of Bryophytes and Pteridophytes.

8. To identify, describe and study in detail the life cycles of three Gymnosperms.

Paper – II: Course outcomes: The students

1. Acquire knowledge of different fossil forms and understand their role in evolution.
2. Provide plant description, describe the morphological and reproductive structures of seven families and also identify and classify according to Bentham and Hooker's system.
3. Proficiency in the use of keys and identification manuals for identifying any unknownplants to species level.
4. Relate anomalies in internal stem structure with function and appreciate the salient features of the root stem transition zone.
5. Exposure to pollen study and learn to apply it in various fields
6. Study contribution of Botanical gardens, BSI to Angiosperm study and provide plant description, describe the morphological and reproductive structures of seven families.
7. Gain exposure to a phylognetic system of classification.
8. Gain insight into the anatomical adaptations of different ecological plant groups.
9. Understand development plant of male and female gametophytes, embryonic structure and development.
10. To understand the different aspects and importance of Biodiversity and utilize them for conservation of species so as to prevent further loss or extinction of Biodiversity and preserve the existing for future generations.

Course outcomes: The students

1. Acquire knowledge about two important organelles and molecular mechanisms oftranslation
2. Understand water relations of plants, inorganic and organic solute transport, and applythe knowledge to manage mineral nutrition and survival in challenging abiotic stresses.
3. Understand succession in plant communities and study remediation technologies inorder to apply knowledge acquired for cleanup of polluted sites.
4. Get exposure to principles and techniques of plant tissue culture and apply these studies for improving agriculture and horticulture and to become an entrepreneur.
5. Study various plant biomolecular structures and appreciate the structures, role,

functionsand applications of enzymes.

6. Gain insight into the Nitrogen and plant hormone metabolism with applications of the same in agriculture and horticulture.
7. Understand principles of genetic mapping, mutations and solve problems based on them,gain knowledge of various metabolic disorders and their implications.
8. Generate and test hypotheses, make observations, collect data, analyze and interpret results, derive conclusions, and evaluate their significance within a broad scientific context, using suitable statistical techniques.

Paper IV: Course outcomes: The students:

1. Get exposure to the technique of mushroom cultivation and explore the possibility of entrepreneurship in the same.
2. Learn ethnobotanical principles, applications and utilize indigenous plant knowledge forthe cure of common human diseases and improvement of agriculture.
3. Gain knowledge about the latest molecular biology techniques for isolation andcharacterization of genes.
4. Learn principles and application of commonly used techniques in instrumentation.
5. Gain proficiency in the monograph study and pharmacognostic analysis of six medicinalplants.
6. Gain insight into recent molecular biology techniques for DNA analysis and amplificationand Barcoding techniques and applications therein.

Paper - V : Course outcomes: The students

1. Understand basics of Horticulture, branches of Horticulture and horticultural research institutes in India.
2. Study the major propagation practices (Natural and artificial) in horticultural crops.
3. Understand the various types of manures, fertilizers and diseases for horticultural plants.
4. Learn the basic information about garden and garden operations useful in horticulture.
5. Gain knowledge about the types, uses and scope of organic farming.
6. Understand the concept of landscape gardening, priciples, types, garden locations and major gardens in India.
7. Get knowledge about the hoprticultural produce, green house technology, floriculture

etc.

8. State the various methods and practices of commercial production of horticulturalproduce.

9. Gain detailed knowledge and proficiency in preservation of post-harvest produce andexplore the possibility of entrepreneurship in the field.

7. Chemistry

Programme Specific Outcome

1. Core competency: Students will acquire core competency in the subject Chemistry, and in allied subject areas.
2. A systematic and coherent understanding of the fundamental concepts in Physical chemistry, Organic Chemistry, Inorganic Chemistry, Analytical Chemistry, and all other related allied chemistry subjects.
3. Students will be able to use the evidence-based comparative chemistry approach to explain chemical synthesis and analysis.
4. Students will be able to characterize, identify and separate components of organic or inorganic origin and will also be able to analyze them by making use of the modern instrumental methods learned.
5. Students will be able to understand the basic principle of equipment and instruments used in the chemistry laboratory.
6. Students will be able to demonstrate the experimental techniques and methods of their area of specialization in Chemistry
7. The course curriculum also includes components that can be helpful to graduate students to develop critical thinking ability by way of solving problems/numerical using basic chemistry knowledge and concepts.
8. Appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues, and key issues facing our society in terms of energy, health, and medicine.
9. Lifelong learner: The course curriculum is designed to inculcate a habit of learning continuously through the use of advanced ICT techniques and other available techniques/books/journals for personal academic growth as well as for increasing employability opportunity.

FYBSc Paper -I : Course Outcome

1. The learners understand the concept of thermodynamics, understand and use the terms

internal energy and enthalpy, ways of expressing the concentration of solutions and its inter-conversions.

2. The student learner tells and analyze bond fission, electrophiles and nucleophiles, chemistry of reactive intermediates and types of organic reactions.
3. The learner understands the gas laws kinetic theory of gases, the thermal equilibrium, the second law of Thermodynamics and concept of entropy and spontaneity.
3. The learner is made to understand the concept of qualitative analysis and its classification, the concept of acids and bases along with its advantages and limitations.
4. The learner is made to understand the classification, mechanism of elimination and addition reactions, the hydroxylation, 1,2 and 1,4-addition Diels-Alder reaction and reactions of alkynes.

Paper – II: Course Outcome

1. The learner understands the kinetics of first and second order reactions, properties of liquid i.e. surface tension, viscosity and refractive index and liquid crystals
2. The learner narrates the classification and properties of Main group elements, compounds like $NaHCO_3$, NaCl etc., oxides of S and oxyacids and w.r.t. environmental aspects.
3. The student learner narrates the Projection formulae, Geometrical isomerism, Syn/Anti, E/Z notations, the concept of Chirality, enantiomers and distereoisomers, D/L and R/S designations.

Programme Specific 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 analyzing and interpreting results of the experiments he conducts or performs.

7. To make the learner capable of acquiring or pursuing a source of livelihood like jobs in chemical industry.
8. To arouse the interest to pursue higher levels of learning in chemistry.

SYBSc : Paper-I - Course Outcome

1. The learner understands free energy functions, the concept of thermodynamics of open system, concept of fugacity and activity vant hoff's isochore, conductivity equivalent conductivity & molar conductivity, Kohlrausch law of independent migration of ion, applies applications of conductance measurement
2. The student understands concept of transference number and its experimental determination, the concept of non-directional bonding.
3. The student narrates how the formation of molecules such as CH_4,NH_3,H_2O Involving SP^3 hybridisation processes of molecular orbital theory (LCAO-MO approach),Wave mechanical treatment for molecular orbitals,concept of bond order, nucleophilic substitution reaction of alkyl halide
4. The learner understand reactivity of aryl halide, preparation, reactions of organomagnesium and organolithium compounds, how the preparation and reactions of alcohols, phenols and epoxides.

Course Outcome : PAPER- II

1. The student understands types of complex reaction, the effect of temperature on reaction rate.
2. The student understands various theories of reaction rates e.g. collision theory activated complex theory, the thermodynamics of ideal solutions and Rault's Law.
3. The students understand The concept of partial miscibility of liquids with respect to phenol-water triethanolamine-water and water nicotine system, the concept of immiscibility of liquids, chemistry of Silicon & Germanium.
4. The students understands electrochemistry of Nitrogen family, nomenclature of carbonylcompounds, mechanism of nucleophilic reaction.
5. The students know reaction of various reagent on carbonyl compounds (NaHSO3, HCN, RMgX, Phenylhydrazine, 2,4 dinitrophenyl hydrazine,$LiAlH_4$ & $NaBH_4$), Benzoin condensation, Knoevengal condensation, Claisen-Schimidt and Cannizaro reaction.

PAPER III : Course Outcome

1) The Student understands the role of analytical chemistry, significance of sampling in analytical chemistry.

2) The student understands concept of errors, precision and accuracy and correction of determinate errors, titrimetric methods i.e. neutralization titration, redox titration, precipitation and complexometric titration.

3) The student understand calculation in titrimetric:- Normality, Molarity, Formality and their calculation, concept of pH and neutralization, the student understand concept ofend point and equivalence point in neutralization reaction.

4) The student narrates various methods of end point determination, use of indicator, change in potential, change in conductance, how to construct various titration curve, concept of gravimetry with respect to types, steps and application.

Programme Specific Outcome

PAPER-I **Course Outcome**

1) The learner understand Nernst equation and it's importance, thermodynamics of reversible cell, concentration cells with transference and without transference, how to determine pH using hydrogen electrode.

2) The learner learn phase rule and how to derive Clausius Clayperon equation and its importance, phase diagrams of one components system and two component systems

3) The student is aware of position of transition metals in the periodic table., extra stability cases d0, d5 and d10, colour and the magnetic property of d-block elements, chemistry of Titanium and Vanadium.

4) The student understand nomenclature of co-ordination compound, types of ligands and formation of co-ordination compound, of co-ordination compounds. Werner theory, EAN rule and 18 electron rule.

5) The learner understand the nomenclature, structure and physical properties of carboxylic acids, idea of preparation of carboxylic acid and reaction of carboxylic acid with mechanism, Claisen condensation and Diekmann condensation.

PAPER-II : Course Outcome

1. The learner reserves the knowledge of laws of crystallography, characteristics of Simple cube, Face centre cube and Body centered cube, use of X-rays in study of crystal structure.
2. The students understand catalysis, catalytic activity , catalysis poisoning, mechanism and kinetics of acid-base catalysed reaction, the effect of particle size and efficiency of nano-particle as catalyst.
3. The learner understand physical properties of concentrated Oxo-acid like sulphuric acid, nitric acid and phosphoric acid, uses and environmental aspect of these acids.
4. The learner understand nomenclature, reactivity and methods of preparation of amines, various reactions of amines e.g. Hoffman's elimination, electrophilic substitution in aromatic amine.
5. The learner understands preparation reactions of Dizonium salt and does the classification, nomenclature of five membered and six membered heterocyclic ring, synthesis of Furan, Pyrole, Thiophene and Pyridine.

PAPER-III : Course Outcome

1. The learner understands various methods of separation precipitation, centrifugation, distillation, electrophoresis, ion exchange, Nernst distribution law and distribution constant
2. The learner understand and tells about single steps extraction, multiple steps extraction, the learner understand batch extraction and continuous extraction, concepts of chromatography, paper chromatography, thin layer chromatography.
3. The learner tells the principle and instrumentation of potentiometry, an idea of reference electrode and indicator electrode and their use in neutralization reaction.
4. The learner tells principle and instrumentation of conductometry., application of neutralization titrimetry, Advantage and limitation of conductometric titration.
5. The student learner prepares the Gaussian distribution curve, confidence limit and confidence interval, and the criteria for rejection of doubtful result.

TYBSc: Paper I Programme Specific Outcome

1. The basic principles of physical chemistry and its applications in various branches of chemical sciences are told by the student.

Course Outcome:

1. The learner understands the molecular motions and its uses in structure elucidation., electrochemical cell, its classification, ion specific electrodes, Galvanic cell and Debye Huckel Limiting law, the principles of Chemical Thermodynamics.
2. Learners understand Osmosis and Van't Hoff law, Gibb's phase rule and its applications, surface chemistry and its uses in solid phase catalysis, chemistry of colloids and its use as surfactants.
3. The student learns Unimolecular theory and Activated complex theory for chemical kinetics, principles of Polymer Chemistry, basic principles of Nuclear Magnetic Resonance Spectroscopy.
4. Learners understand applications of Nuclear Chemistry, principles of Quantum Chemistry.

Paper – II: Programme Specific Outcome

1. The basic principles of Inorganic chemistry are narrated by student.

Course Outcome:

1. The student understand terms used in solid state chemistry, different types of packing in solids.
2. The student tells discovery of superconductivity, types of superconductivity, lanthanon contraction.
3. The learners explain metallic bonding their properties conductors, insulators and semiconductor and also understand n-type and p-type semiconductor, the concept of point group with illustration using different point group C3V, C2V, D3h, the importanceof non-aqueous solvents.
4. The student deserves the knowledge of of structure, Xenon compounds and theories of metal- ligand bond.
5. The learner narrates crystal field effect, d-orbitals in octahedral, tetrahedral, square planar complexes, Jahn-Tellar effect.
6. The learner tells study molecular orbital theory, origin of electronic spectra analyses p2 and d2 configuration, Orgel diagrams, thermodynamic and kinetic stability, synthetic methods with respect to metal-metal, metallation, methylene- insertion reaction.
7. The student understand chemical reaction of organ metallic compounds with respect to oxygen and halogen, alkylation, arylation, reaction, protonic reagent, complex formation.

8. The student narrates respect to Heck and Suzuki reactions, characteristic of homogeneous and heterogeneous.

Paper III: Programme Specific Outcome:

1. Learner understands Stereochemistry of Organic compounds and organic reactions along with applications of Organometallic Chemistry and Synthetic Organic Chemistry.

Course Outcome:

1. Learners understand mechanism of elimination reactions, NGP reactions, esterification and ester hydrolysis.
2. Learner understands mechanism of rearrangements, concept of molecular chirality and strains in cycloalkanes, stereoselective and stereospecific reactions with mechanism.
3. Learner gets knowledge about names of allenes, spiranes, biphenyls.

Semester VI: **Programme Specific Outcome**

1. Learner understands Heterocyclic Chemistry and importance of catalyst and reagents in Organic Chemistry.

Course Outcome:

1. Learner understands the synthesis of heterocyclic compounds, its reactivity andreactions, selectivity and applications of catalysts and reagents, of Biomolecules, their structures and reactions.
2. The learner tells basics of U.V., I.R, NMR spectroscopy and Mass spectrometry and its applications in structure determination of Organic compounds.
3. Learner does Classification and importance of Natural products.

Paper IV : Programme Specific Outcome

1. To understand the concept & working of instruments and methods used to separate, identify, and quantify matter.

Course Outcome

1. The learner will able to understand the acceptable practices for the analysis and consistent interpretation of data obtained from chemical and other analysis.
2. Students are enables to learn samplings, types of sampling, samplings of gases, liquids, solids etc.

3. The technique that enable students, Separation of samples by chromatographictechniques like paper, Thin layer, HPLC & HPTLC and their applications in chemical separation.
4. The students will understand the optical instrumental methods like FES and AAS, fluorescence, Phosphorescence, Turbidimetry and Nephelometry their applications in atomic & molecular analysis.
5. Learner is explained the principles of redox titration, detection of end point and concept of UV- Visible spectroscopy and its applications.

Course Outcome:

1. Thelearner understands the concept& principles of Potentiometric titration, Polarography and Amperometric titration and their applications in chemical analysis.
2. Learner explains the techniques of food processing, food preservation, types of food preservation.
3. Learner understands the concept of various type cosmetics like face powder,Deodorants.
4. Learners will understand the theory of Gas chromatography & ion-exchange chromatography.
5. Types of Gas chromatography and their applications in chemical separations.
6. To make learners understand the Thermal Methods of analysis, Thermometric titration, and Neutron activation analysis and their application in chemical analysis.

Paper V : Applied Component (Drug and Dyes) : Programme Specific Outcome

1. Learners understand meaning of drug, various routes and dosages of drug's administration and mode of action of drugs.
2. Learners understand the discovery, design and development, metabolism of drug chemotherapeutic agents and use of nano particles in medicinal chemistry.

Couse Outcome

1. Learner is made to understand oral and parenteral routes of drug administration along with its advantages and disadvantages.
2. Learner is provided with a brief introduction of Pharmacodynamic agents and he applies.
3. Learners understand the classification of cardiovascular drugs, understand the discovery of lead compounds, chemotherapeutic agents, the synthesis and uses of

drug intermediate.

Programme Specific Outcome

1. Learner understands the classification of dyes based on constitution and applications and relation between colour and chemical constitution of dyes.
2. Learner understands optical brightener, organic pigment, unit process and method of dyeing cotton fibers.
3. Learner understands synthesis and uses of dyes and toxicity of dyes.

Course Outcome

1. Learners Natural synthetic dyes, historical background and limitation, classification of dyes based on constitution and application.
2. Learner understands relation between colour and chemical constitution including various theories.
3. Learner understands the optical brighteners, organic pigments and difference between lakes-tonners and dyes-pigments.
4. Learner understands synthesis and use of specific dyes.

8. Mathematics

Program Specific Outcomes: **B.Sc Mathematics**

1. Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerous power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.
2. Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
3. Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
4. A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

Programme Outcomes: TYBSc

1. Enabling students to develop positive attitude towards mathematics as an interesting and valuable subject
2. Enhancing students overall development and to equip them with mathematical modeling, abilities, problem solving skills, creative talent and power of communication.
3. Acquire good knowledge and understanding in advanced areas of mathematics and physics.

Course outcomes:

1) **Multivariable Calculus II (Sem V):**

In this course students will learn the basic ideas, tools and techniques of integral calculus and use them to solve problems from real-life applications including science and engineering problems involving areas, volumes, centroid, Moments of mass and center of mass Moments of inertia. Examine vector fields and define and evaluate line integrals using the Fundamental Theorem of Line Integrals and Green's Theorem; compute arc length.

2) **Complex Analysis (Sem VI):**

Students Analyze sequences and series of analytic functions and types of convergence, Students will also be able to evaluate complex contour integrals directly and by the

fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula, they will also be able to represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem.

3) **Group Theory, Ring Theory (Sem V, Sem VI):**

Students will have a working knowledge of important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element, rings, Euclidean domain, Principal ideal domain and Unique factorization domain. Students will also understand the connection and transition between previously studied mathematics and more advanced mathematics. The students will actively participate in the transition of important concepts such homomorphisms & isomorphisms from discrete mathematics to advanced abstract mathematics.

4) **Topology of metric spaces (Sem V), Topology of metric spaces and real analysis (Sem VI):**

a. This course introduces students to the idea of metric spaces. It extends the ideas of open sets, closed sets and continuity to the more general setting of metric spaces along with concepts such as compactness and connectedness.

b. Convergence concepts of sequences and series of functions, power series are also dealt with. Formal proofs are given a lot of emphasis in this course.

c. This course serves as a foundation to advanced courses in analysis. Apart from understanding the concepts introduced, the treatment of this course will enable the learner to explain their reasoning about analysis with clarity and rigor.

5) **Partial Differential equations (Sem V: Paper IV: Elective A):**

a. Students will able to understand the various analytical methods for solving first order partial differential equations.

b. Students will able to understand the classification of first order partial differential equations.

c. Students will able to grasp the linear and non linear partial differential equations.

6) **Integral Transforms (Sem VI: Paper IV- Elective A):**

a. Students will able to understand the concept of integral transforms and their corresponding inversion techniques.

b. Students will able to understand the various applications of integral transforms.

2. Number Theory and its applications I and II (Sem V, Sem VI):

a. The student will be able to a. Identify and apply various properties of and relating to the integers including primes, unique factorization, the division algorithm, and greatest common divisors.

b. Understand the concept of a congruence and use various results related to congruences including the Chinese Remainder Theorem. Investigate Pseudo-primes , Carmichael number, primitive roots.

c. Identify how number theory is related to and used in cryptography. Learn to encrypt and decrypt a message using character ciphers. Learn to encrypt and decrypt a message using Public-Key cryptology.

d. Express a rational number as a finite continued fraction and hence solve a linear diophantine equation. Express a given repeated continued fraction in terms of a surd. Expand a surd as an infinite continued fraction and hence find a convergent which is an approximation to the given surd to a given degree of accuracy .Solve a Pell equation from a continued fraction expansion

e. Solve certain types of Diophantine equations. Represent a Primitive Pythagorean Triples with a unique pair of relatively prime integers.

f. Identify certain number theoretic functions and their properties. Investigate perfect numbers and Mersenne prime numbers and their connection. Explore the use of arithmetical functions, the Mobius function, and the Euler function.

3. Graph Theory (Sem V: Paper IV- Elective C)

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

a. Demonstrate the knowledge of fundamental concepts in graph theory, including properties and characterization of graphs and trees.

b. Describe knowledgeably special classes of graphs that arise frequently in graph theory c. Describe the concept of isomorphic graphs and isomorphism invariant properties of graphs

c. Describe and apply the relationship between the properties of a matrix representation of a graph and the structure of the underlying graph

d. Demonstrate different types of algorithms including Dijkstra's, BFS, DFS, MST and Huffman coding.

e. Understand the concept of Eulerian graphs and Hamiltonian graphs. g. Describe real-world applications of graph theory.

4. Graph Theory and Combinatorics (Sem VI: Paper IV -Elective C)

a. Understand and apply the basic concepts of graph theory, including colouring of graph, to find chromatic number and chromatic polynomials for graphs

b. Understand the concept of vertex connectivity, edge connectivity in graphs and Whitney's theorem on 2-vertex connected graphs.

c. Derive some properties of planarity and Euler's formula, develop the under-standing of Geometric duals in Planar Graphs

d. Know the applications of graph theory to network flows theory.

e. Understand different applications of system of distinct representative and matching theory.

f. Use permutations and combinations to solve counting problems with sets and multisets. g. Set up and solve a linear recurrence relation and apply the inclusion/exclusion principle. h. Compute a generating function and apply them to combinatorial problems.

5. Operations research (Sem V & VI):

Students should able to formulate linear programming problem and apply the graphical and simplex method for their feasible solution. Moreover students should understand various alternative operation research techniques for the feasible solution of LPP.

Basic concepts of probability and random variables Students will be able to understand the role of random variables in the statistical analysis and use them to apply in the various probability distributions including Binomial distribution, Poisson distribution and Normal distribution. Moreover students will able to apply the concepts of expectations and moments for the evaluation of various statistical measures.

S.Y.B.Sc. Mathematics:

1. Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerous power of mathematical ideas and tools and know how to use

them by modeling, solving and interpreting.

2. Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
3. Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
4. A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences

Programme Outcomes:

1. Enabling students to develop positive attitude towards mathematics as an interesting and valuable subject
2. Enhancing students overall development and to equip them with mathematical modeling, abilities, problem solving skills, creative talent and power of communication.
3. Acquire good knowledge and understanding in advanced areas of mathematics and statistics.

Course outcomes:

1. **Calculus (Sem III) & Multivariable Calculus I(Sem IV):** This course gives introduction to basic concepts of Analysis with rigor and prepares students to study further courses in Analysis. Formal proofs are given lot of emphasis in this course which also enhances understanding of the subject of Mathematics as a whole.

2. **Linear Algebra I (Sem III) & Linear Algebra II (Sem IV):** This course gives expositions to system of linear equations and matrices, Vector spaces, Basis and dimension, Linear Transformation, Inner product space, Eigen values and eigenvectors.

3. **Ordinary Differential Equations (Sem III)** prepares learner to get solutions of so many kinds of problems in all subjects of Science and also prepares learner for further studies of differential equations and related fields.

4. **Numerical Methods and Statistical Methods:** Lerner will learn different types of Numerical methods and statistical methods to apply in different fields of Mathematics.

F.Y.B.Sc. Mathematics:

1. Give the students a sufficient knowledge of fundamental principles, methods and a clear perception of innumerous power of mathematical ideas and tools and know how to use them by modeling, solving and interpreting.
2. Reflecting the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.
3. Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
4. A student should get adequate exposure to global and local concerns that explore them many aspects of Mathematical Sciences.

Course outcomes:

1. **Calculus (Sem I & II):** This course gives introduction to basic concepts of Analysis with rigor and prepares students to study further courses in Analysis. Formal proofs are given lot of emphasis in this course which also enhances understanding of the subject of Mathematics as a whole. The portion on first order, first degree differentials prepares learner to get solutions of so many kinds of problems in all subjects of Science and also prepares learner for further studies of differential equations and related fields.

2. **Algebra I (Sem I) & Discrete Mathematics (Sem II):** This course gives expositions to number systems (Natural Numbers & Integers), like divisibility and prime numbers and their properties. These topics later find use in advanced subjects like cryptography and its uses in cyber security and such related fields.

9. Physics

Programme Specific Outcomes

After successful completion of three year degree program in Physics a student-

1. Understands the core concept of Physics subjects.
2. Acquire analytical and logical skill for higher Education.
3. Excel in Experimental and Theoretical Physics
4. Confident to take up competitive exams
5. Gain the knowledge of Physics through theory and practical's
6. Explain nomenclature, structure classical and Quantum mechanical, concepts in physics.
7. Identify innovatives ideas, models in physics and solve numerical problems.
8. Use Charts, Instruments and Equipments.
9. Know structure-activity relationship.
10. Understand good laboratory practices and safety.
11. Develop research oriented skills.
12. Make aware and handle the instruments/equipments.
13. Physics is a vast subject area that explains observation, interpretation, universal physicalphenomena using mathematics and Physics.
14. All the innovations related with the universe is explained in Physics.
15. With greater possibilities in research field, physics is considered to be the basic scienceand is the foundation for engineering programmed offered.
16. Various other options are to get involved in any project work carried out by electronic &communication industries or companies in the manufacturing sector.

Class :F.Y.B.Sc. [Sem I] Subject: Classical Physics [USPH101]

On successful completion of this course students

1) Understand Newton's laws and apply them in calculations of the motion of simplesystems.

2) Use the free body diagrams to analyze the forces on the object.

3) Use Work and Energy equivalence and its applications through suitable numerical

4) Understand the concepts of friction and the concepts of elasticity, Viscocity, fluid mechanics in daily life and be able to perform calculations using them.

5) Understand the Real gases and validity of the laws of thermodynamics.

6) Apply the laws of thermodynamics to formulate the relations necessary to analyze athermodynamic process.

7) Demonstrate quantitative problem solving skills in all the topics covered

Subject: Modern Physics [USPH102]

After successful completion of this course students

1) Understand nuclear properties and nuclear behavior and various types of nuclear reactions.
2) Understand the concepts of radioactivity, types of isotopes and their applications. Understand different types of radioactive elements.
3) Understand various types of nuclear detectors and their applications.
4) Demonstrate and understand the quantum mechanical concepts.
5) Demonstrate quantitative problem solving skills in all the topics covered.

Subject: Practical course – 1 [USPHP1]

On successful completion of this course the students

1) Demonstrate their practical skills.

2) Understand and practice the skills while doing physics practical.

3) Understand the use of apparatus and their use without fear.

4) Correlate their physics theory concepts through practical.

5) Understand the concepts of errors and their estimation.

Class : F.Y.B Sc. Subject.: Optics- I USPH201

On successful completion of this course students

1) Understand the basic mathematical concepts and applications of them in physicalsituations.

2) Understand the concept of lens, lens defects and their minimization.

3) Significance of combination of lenses implied to eyepiece of optical instruments.

4) Understand interference of light with few well known daily life examples.

5) Understand Lasers and optical fibers, their applications in day to day life.

6) Demonstrate quantitative problem solving skills in all the topics covered.

Subject : Electricity and Electronic USPH202

On successful completion of this course students

1) Understand the difference between AC and DC circuits and applications of AC &DC

circuits.

2) Demonstrate mathematical interpretation of AC circuits and AC Bridges or network.

3) Apply current and voltage rules to determine impedance frequency of the circuits

4) Understand the basic concepts and laws of of logic operations using Gates

5) Understand the physical meaning and applications of electric and magnetic phenomenon

6) Develop the problem solving skills in branch of electric and magnetostatics.

Subject: Practical course -2 [USPHP2]

1) The learners understand and practice the skills while doing physics practical.

2) Understand the use of apparatus and their use without fear.

3) Correlate their physics theory concepts through practical.

4) Understand the concepts of errors and their estimation.

Class : S.Y.B.Sc. : Subject: Mechanics and thermodynamics [USPH301]

On successful completion of this course, students

1) Understand the concepts of mechanics & properties of matter & to apply them toproblems.

2) Comprehend the basic concepts of thermodynamics & its applications in physicalsituation.

3) Learn about situations in low temperature.

4) Demonstrate tentative problem solving skills in all above areas.

Subject: Vector calculus, Analog Electronics [USPH302]

On successful completion of this course students

1) Understand the basic concepts of mathematical physics and their applications in physicalsituations.

2) Understand the basic laws of electrodynamics and be able to perform calculations usingthem.

3) Understand the basics of transistor biasing, operational amplifiers, their applications

4) Understand the basic concepts of oscillators and be able to perform calculations usingthem.

5) Demonstrate quantitative problem solving skill in all the topics covered.

Subject: Applied Physics - I [USPH303]

On completion of this, it is expected that-

1) Students will be exposed to contextual real life situations.

2) Students will appreciate the role of Physics in 'interdisciplinary areas related to materials,Bio Physics, Acoustics etc.

3) The learner will understand the scope of the subject in Industry & Research.

4) Experimental learning opportunities will faster creative thinking & a spirit of inquiry.

Subject: Practical course -3 [USPHP3]

On successful completion of this course students

1) Understand &practice the skills while performing experiments.
2) Understand the use of apparatus and their use without fear& hesitation.
3) Correlate the physics theory concepts to practical application.
4) Understand the concept of errors and their estimation.

Class: S.Y.B.Sc.: Subject: Optics and Digital Electronics [USPH401]

On successful completion of this course students

1) Understand the diffraction and polarization processes and applications of them inphysical situations.

2) Understand the applications of interference in design and working of interferometers.

3) Understand the resolving power of different optical instruments.

4) Understand the working of digital circuits

5) Use IC 555 time for various timing applications.

6) Demonstrate quantitative problem solving skills in all the topics covered.

Subject: Quantum Physics [USPH402]

On successful completion of this course students

1) Understand the postulates of quantum mechanics and to understand its importance inexplaining significant phenomena in Physics.
2) Demonstrate quantitative problem solving skills in all the topics covered.

Subject: Applied Physics II [USPH403]

On successful completion of this course, students

1) Understand the concepts of mechanics & properties of matter & to apply them toproblems.

2) Comprehend the basic concepts of thermodynamics & its applications in physicalsituation.

3) Learn about situations in low temperature.

4) Demonstrate tentative problem solving skills in all above areas.

Subject: Practical course -4 [USPHP4]

On successful completion of this course students

1) Understand & practice the skills while performing experiments.

2) Understand the use of apparatus and their use without fear & hesitation.

3) Correlate their physics theory concepts to practical application.

4) Understand the concept of errors and their estimation.

5) Understand the concepts of errors and their estimation.

Class :T.Y.B.Sc.: Subject: Mathematical and Statistical Physics [USPH501]

1) The students learn some mathematical techniques required to understand the physical phenomena at the undergraduate level and get exposure to important ideas of statistical mechanics.

2) The students solve simple problems in probability, understand the concept of independentevents and work with standard continuous distributions.

3) The students have idea of the functions of complex variables; solve nonhomogeneous differential equations and partial differential equations using simple methods.

4) The units on statistical mechanics would introduce the students to the concept of microstates, Boltzmann distribution and statistical origins of entropy.

5) The student understand the difference between different statistics, classical as well as quantum.

Subject: Solid State Physics [USPH502]

On successful completion of this course students

1) Understand the basics of crystallography, Electrical properties of metals, Band Theory of solids, demarcation among the types of materials, Semiconductor Physics and Superconductivity.

2) Understand the basic concepts of Fermi probability distribution function, Density ofstates, conduction in semiconductors and BCS theory of superconductivity.

3) Demonstrate quantitative problem solving skills in all the topics covered.

Subject: Atomic and Molecular Physics [USPH503]

On successful completion of this course, the student understand

1) The application of quantum mechanics in atomic physics

2) The importance of electron spin, symmetric and anti-symmetric wave functions

andvector atom model

3) Effect of magnetic field on atoms and its application

4) Learn Molecular physics and its applications.

5) This course will be useful to get an insight into spectroscopy.

Subject: Electrodynamics [USPH504]

On successful completion of this course students

1) Understand the laws of electrodynamics and be able to perform calculations using them.

2) Understand Maxwell's electrodynamics and its relation to relativity

3) Understand how optical laws can be derived from electromagnetic principles.

4) Develop quantitative problem solving skills.

Class :T.Y.B.Sc. [Sem VI] :Subject: Classical Mechanics [USPH601]

1) This course will introduce the students to different aspects of classical mechanics.

2) The student understands the kinds of motions that can occur under a central potential and their applications to planetary orbits.

3) The students appreciate the effect of moving coordinate system, rectilinear as well as rotating.

4) The students learns the concepts needed for the important formalism of Lagrange's equations and derive the equations using D'Alembert's principle.

5) They solve simple examples using this formalism.

6) The introduction to simple concepts from fluid mechanics and understanding of the dynamics of rigid bodies is also expected.

7) The students learn the drastic effect of adding nonlinear corrections to usual problems of mechanics and nonlinear mechanics can help understand the irregularity we observe around us in nature.

Subject: Electronics [USPH602]

On successful completion of this course students

1) Understand the basics of semiconductor devices and their applications.

2) Understand the basic concepts of operational amplifier: its prototype and applications asinstrumentation amplifier, active filters, comparators and waveform generation.

3) Understand the basic concepts of timing pulse generation and regulated power supplies

4) Understand the basic electronic circuits for universal logic building blocks and

basicconcepts of digital communication.

5) Develop quantitative problem solving skills in all the topics covered.

Subject: Nuclear Physics [USPH603]

On successful completion of this course, the student

1) Understand the fundamental principles and concepts governing classical nuclear and particle physics and have knowledge of their applications interactions of ionizing radiation with matter the key techniques for particle accelerators the physical processes involved in nuclear power generation.

2) 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.

Subject: Special Theory of Relativity [USPH604]

On successful the completion of the course the student

1) Understand the significance of Michelson Morley experiment and failure of the existing theories to explain the null result.

2) Understand the importance of postulates of special relativity, Lorentz transformation equations and how it changed the way we look at space and time, Absolutism and relativity,Common sense versus Einstein concept of Space and time.

3) Understand the transformation equations for: Space and time, velocity, frequency, mass, momentum, force, Energy, Charge and current density, electric and magnetic fields.

4) Solve problems based on length contraction, time dilation, velocity addition,

5) Doppler Effect, mass energy relation and resolve paradoxes in relativity like twin paradox etc.

10. Zoology

Program Specific Outcomes:

1. Students of Zoology should aware about life science and efforts for sustainable development.
2. Understands the importance of biodiversity and takes efforts for biodiversity conservation.
3. Students of Zoology will gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.
4. Students classify the different animals.
5. Apply the knowledge of internal structure of cell, its organelles their functions in control of various metabolic functions of organisms.
6. Understands the complex evolutionary processes from lower to higher animals.
7. Students understand different types of animal behaviour of animals.
8. Understands different physiological process.
9. Understands importance of environment and environmental conservation.
10. Understands about the Vermicomposting, dairy farming, fish farming, sericulture and apiculture.
11. Understands concepts of genetics and its importance in health.
12. Gains knowledge about the blood, different hematological disorders and different types of blood tests.

Course specific Outcomes: Zoology.

Semester-I : Paper-I (USZO101) Wonders of Animal World, Biodiversity and its Conservation.

1. 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.
2. Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation.
3. 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.

Paper-II (USZO102) INSTRUMENTATION and ANIMAL BIOTECHNOLOGY.

1. 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.
2. 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.
3. 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.

Semester-II: Paper-I (USZO201) Ecology and Wildlife Management.

1. 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.
2. 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.
3. Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism.

Paper-II (USZO 202) NUTRITION, PUBLIC HEALTH AND HYGIENE

1. 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.
2. 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.
3. 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.

Semester-III: Paper-I (USZO301) Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids.

1. Learner would comprehend and apply the principles of inheritance to study heredity.

2. Learner will understand the concept of multiple alleles, linkage and crossing over.
3. Learner will comprehend the structure of chromosomes and its types.
4. Learner will understand the mechanisms of sex determination.
5. Learner would be able to correlate the disorders linked to a particular sex chromosome.
6. Learner will understand the importance of nucleic acids as genetic material.
7. Learner would comprehend and appreciate the regulation of gene expressions.

Paper-II (USZO302) Nutrition and Excretion, Respiration and Circulation, Control and Coordination of Life Processes, Locomotion and Reproduction

1. Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.
2. Learner would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.
3. Learner would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy.
4. Learner will be able to correlate the habit and habitat of animals with respiratory and circulatory organs.
5. Learner would understand the process of control and coordination by nervous and endocrine regulation.
6. Learner would be amazed by various locomotory structures found in the animal kingdom.
7. Learner would be acquainted with various reproductive strategies present in animals.

Paper-III USZOE1303 (COURSE-VIIA) Elective-I: Ethology, Parasitology, Economic Zoology.

1. Learner would gain insight into different types of animal behaviour and their role in biological adaptations.
2. Learner would be sensitized to the feelings which are instrumental in social behaviour.
3. Learner would understand the general epidemiological aspects of parasites that affect humans and take simple preventive measures for the same.
4. Learner would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment.
5. Learner would gain knowledge on animals useful to mankind and the means to make the most of it.

6. Learner would learn the modern techniques in animal husbandry.
7. Learner would pursue entrepreneurship as a career.

Semester-IV

Paper-I (USZO401) Origin and Evolution of Life, Population Genetics and Evolution, Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research.

1. Learner will gain insights into the origin of life.
2. Learner will analyse and critically view the different theories of evolution.
3. Learner would understand the forces that cause evolutionary changes in natural populations
4. Learner would comprehend the mechanisms of speciation
5. Learner will be able to distinguish between microevolution, macroevolution and megaevolution
6. The learner would develop qualities such as critical thinking and analysis
7. The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research

Paper-II (USZO402) Cell Biology, Endomembrane System and Biomolecules

1. Learner would acquire insight into the composition of the transport mechanisms adopted by the cell and its organelles for its maintenance and composition of cell
2. Learner would appreciate the intricacy of endomembrane system.
3. Learner would understand the interlinking of endomembrane system for functioning of cell
4. The learner will realize the importance of biomolecules and their clinical significance.

Paper-III Elective-I (USZOE1403) Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms.

1. Learner will be able to understand and compare the different types of eggs and sperms
2. Learner will be able to understand and compare the different pre- embryonic stages
3. Learners will able to understand human reproductive physiology
4. Learners will become familiar with advances in ART and related ethical issues.
5. The learners will be sensitized about the adverse effects of pollution and measures to control it.

Semester V :Paper-I (USZO501) Taxonomy - Invertebrates and Type Study

1. Learners will apprehend the basis of classification and modern classification up to class level from phylum Protozoa to Nematoda along with their examples**.**
2. Learners will get an idea of general characteristics and details of invertebrate animal systems.
3. Learners will get idea about the morphology and anatomy of sepia.

Paper-II (USZO502) Haematology and Immunology

1. The learner shall comprehend basic haematology.
2. The learner will be able to identify various components of haemostatic systems.
3. The learner will be familiar with the terminology used and diagnostic tests performed in a pathological laboratory.
4. The learner shall comprehend the types of immunity and the components of immune system.
5. The learner will realize the significant role of immune system in giving resistance against
6. diseases.
7. The learner will develop basic understanding of immunology of organ transplantation.

Paper-III (USZO503) Histology, Toxicology, Pathology and Biostatistics

1. Learner would appreciate the well planned organization of tissues and cells in the organ systems.
2. The course will prepare learner to develop broad understanding of the different areas of toxicology.
3. It will also develop critical thinking and assist students in preparation for employment in pharmaceutical industry and related areas.
4. Learner will be familiar with various medical terminology pertaining to pathological condition of the body caused due to diseases.
5. The learner will be able to collect, organize and analyse data using parametric and nonparametric tests.
6. They will also be able to set up a hypothesis and verify the same using limits of significance.

Paper-IV (USZO504) Anatomy and Developmental Biology

1. Learner will be able to understand the importance of various types of epidermal and dermal derivatives along with their functions.
2. Learner will be able to understand the structure, types and functions of human skeleton.
3. Learner will be able to understand the types of long limb muscles, its arrangement and their role in body movements.
4. Learner will be able to understand the processes involved in embryonic development and practical applications of studying the chick embryology.

Semester VI : Paper-I (USZO601) Taxonomy - Chordates and Type Study

1. Learners will get an idea of origin of Chordates, its taxonomy up to class with reference to phylogeny and their special features.
2. Learners will understand the characteristic features and examples of class of Reptilia, Aves and Mammalia.
3. Learners will get an idea of vertebrate animal life after studying one representative animal shark.

Paper-II (USZO602) Physiology and Tissue Culture

1. The learner shall understand fundamentals of enzyme structure, action and kinetics.
2. The learner shall appreciate the enzyme assay procedures and the therapeutic applications of enzymes.
3. The learner shall comprehend the adaptive responses of animals to environmental changes for their survival.
4. The learner shall understand the types and secretions of endocrine glands and their functions.
5. The learner shall understand the significance of tissue culture as a tool in specialized areas of research.
6. The learner will appreciate its applications in various industries.

Paper-III (USZO603) Genetics and Bioinformatics.

1. Learner shall get an insight into the intricacies of chemical and molecular processes that affect genetic material.

2. 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.
3. 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.
4. The learner shall become aware of the impact of changes occurring at gene level on human health and its diagnosis.
5. Learner shall become aware of the computational point of view of studying the genomes.

Paper-IV (USZO604) Environmental Biology and Zoopharmacognosy.

1. Learner will understand the different factors affecting environment, its impact and environment management laws.
2. Learner will be able to understand various methods for wildlife conservation and will be able to apply knowledge to overcome the issues related to wildlife conservation and management.
3. Learner will understand the paradigms of discovery and commercialization of biological resources and knowledge gained from self-medication observed in animals.
4. The learners will become acquainted with how and why different animal species are distributed around the globe.