Ahmednagar Jilha Maratha Vidya Prasarak Samaj's

SHRI DHOKESHWAR COLLEGE,

TAKALI DHOKESHWAR

Tal:-Parner, Dist. :- Ahmednagar. 414304 (M.S.)

Affiliated to

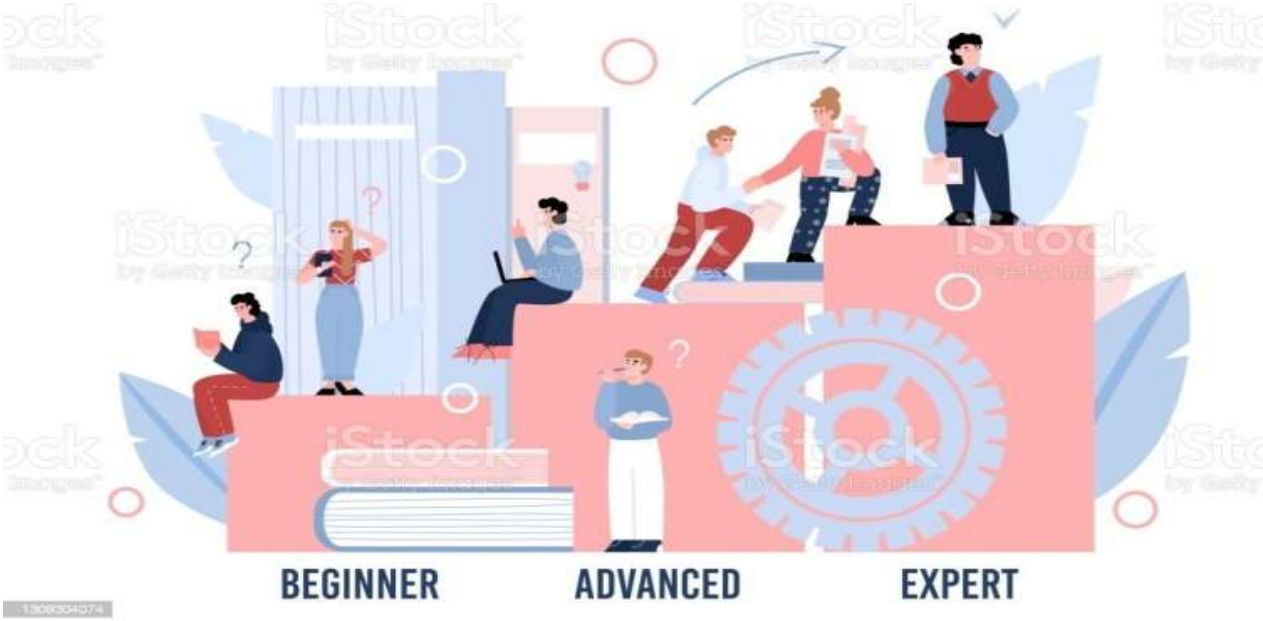
SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

PROGRAM OUTCOMES (PO)

PROGRAM SPECIFIC OUTCOMES (PSO)

COURSE OUTCOMES (CO)

ARTS,COMMERCE & SCIENCE(2022-23)



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Learning Outcomes (2022-23)

Name of Faculty	***Faculty Of Humanities***
Name of Department	***Marathi***
UG Programme	***B.A.Marathi***

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

Programme (POs)

PO1: Students introduced about marathi literature, language skills and government rules after completion of program.
PO2: Marathi writing skill will be improved.
PO3: Students will study modern technology,marathi language and literature.
PO4:Students learn about use of marathi in practical life and in office work.
PO5: For mature life of students different abilities like writing skill,language skill,communication skills were included in B.A,program.

Programme Specific Outcomes (PSO)

PSO1: National education policy have been applied by student centric,Skill based,interdisciplinary curriculum.Which is best for students overall development.
PSO2: Choice based credit system implemented for first year arts from academic year 2019-20 for improvement in learning and evaluation systems.
PSO3: After completion of B.A. students have option to go for higher studies like M.A., M S W, and can prepare for MPSC,UPSC competitive exams.
PSO4: Program is helpful in realization of human values and development of sense of social services.
PSO5: Helps in development of responsible and dutiful citizens.
PSO6 : Develops creative ability.

Course Outcomes (Cos): T.Y.B.A.

Semester-V

(CC-1 E (3) भाषिक कौशल्यषिकास आणि आधुनिक मराठी साहित्यप्रकार :प्रवासवर्णन (G3)

CC-1E(3)Bhashik Kaushlyavikas Ani Adhunik Marathi sahityprkar: Pravasvarnan (G3)

CO1: Students will understand about nature, features, and significance of travel description type of literature CO2: After Study of travel description students able to understand, enjoy, analyse travel description. CO3: Students will able to know objectives, nature and development of travel desciption. CO4: Students will understand about writing skill of travel description.
DSE1 C (3+1) मध्ययुगीन मराठी वाङ्मयाचा स्थूल इतिहास प्रारंभ ते इ.स. १६०० (S3)
DSE1 C (3+1) Madhyugin marathi vangmayacha sthul etihas prarambh te 1600 AD (S3)
CO1: Students will understand nature ,concept,trend of history of marathi literature. CO2:Students will know about cultural and social background of medieval language. CO3:Students will able to understand marathi language and literature according to historical period.
DSE 1 C (3+1) वर्णनात्मक भाषाविज्ञान भाग १ (S4)
Vrnnatmak bhasha vidnyan bhag 1(S4)
CO1:Students will understand nature,significance and use of language in social life CO2:Students will know different branches and methods of language study. CO3:Students will understand about Speaking process , structure of sound production organs and mechanism.
SEC 2 C (2) (कार्यक्रम संयोजनातील भाषिक कौशल्ये : भाग - १ (DSE विषयांशी निगडीत अनिवार्य)
CO1:Students will familarize with nature and types of different programs. CO2:Students will become aware about different skills like linguistic,technical and arrangment of programs.
Semester-VI
(CC-1F (3) भाषिक कौशल्यषिकास आणि आधुनिक मराठी साहित्यप्रकार :कविता (G3)
CO1: Students will understand about nature, features,and significance of poetry. CO2: After Study students able to understand,enjoy, analyse poetry. CO3: Students able to know objectives,nature and development of poetry. CO4: Students understand about writing skill of poetry
(DSE 1 D (3+1) मध्ययुगीन मराठी वाङ्मयाचा स्थूल इतिहास इ.स.१६०१ ते इ.स. १८१७ (S3)
CO1: Students will understand nature ,concept,trend of history of marathi literature. CO2:Students will know about cultural and social background of medieval language. CO3:Students able to understand marathi language and literature according to historical period.

DSE 2 D (3+1) वर्णनात्मकभाषाविज्ञान भाग २ (S4)
CO1:Students understand Meaning configuration of language . CO2:Students will understand nature of sentence and Structure of sentence. CO3:Students will study arrangment of nouns and types of nouns.
SEC 2 D (2) कार्यक्रम संयोजनातील भाषिक कौशल्ये : भाग - २ (DSE विषयांशी निगडीत अनिवार्य
CO1:Students introduced with linguistic skills in different programs. CO2:Students become aware of writing skills of arrangment of different programs. CO3:Students learn linguistic skills of virtual programs.

Name of Faculty	***Faculty Of Humanities***
Name of Department	***Hindi***
UG Programme	***B.A.Hindi***
Program Outcomes (POs)	

1.संप्रेषण कौशल का विकास
2.प्रस्तुति एवं विश्लेषण क्षमता
3.जीवनमूल्य एवं सामाजिक-सांस्कृतिक एहसास
4.आर्थिक क्षमता और व्यवहारज्ञान

Program Specific Outcomes (PSO)

- सृजनात्मकता एवं संभाषण कला
- साहित्य की विविध विधाओं का स्वरूपात्मक ज्ञान
- जीवनमूल्य
- हिंदी विज्ञापन लेखन
- राजभाषा हिंदी के संवैधानिक स्वरुप का
- आकलन
- भेंटवार्ता,साक्षात्कार ,रिपोर्ट लेखन एवं
- समाचार लेखन कौशल
- अनुवाद कौशल
- पारिभाषिक शब्दावली तथा संक्षिप्तियाँ
- हिंदी साहित्य के इतिहास से परिचय
- अनुसंधान प्रविधि एवं प्रक्रिया का ज्ञान
- प्रयोजनमूलक हिंदी से परिचय
- साहित्यशास्त्र एवं भाषाविज्ञान से परिचय
- कार्यालयीन तथा व्यावहारिक पत्राचार
- प्रतिनिधि साहित्यकारों का परिचय

Course Outcomes (Cos): T.Y.B.A.

semester-V

G-3 Kathetar Vidhaye (कथेतर विधाएँ)
1. छात्रों को संस्मरण साहित्य से अवगत करना। 2. छात्रों को रेखाचित्र साहित्य से अवगत करना। 3. छात्रों को मूल्यांकन की दृष्टि का विकास करना। 4. सभा-इतिवृत्त लेखन कौशल वृद्धि का विकास करना। 5. वार्ता-लेखन कौशल दृष्टि निर्माण करना।.
DSE-1C (S3) हिंदी साहित्य का इतिहास
1.हिंदी साहित्येतिहास लेखन का परिचय देना। 2. हिंदी साहित्येतिहास के कालविभाजन तथा नामकरण का परिचय देना। 3. आदिकालीन, भक्तिकालीन, रीतिकालीन प्रमुख साहित्यिक प्रवृत्तियों, रचनाकारों और रचनाओं से परिचित कराना।
2C(S-4) भाषाविज्ञान
1 भाषाविज्ञान के स्वरूप का परिचय देना। 2 छात्रों को भाषाविज्ञान की व्याप्ति समझाना। 3भाषाविज्ञान के अध्ययन की दिशाओं का परिचय देना। 4. भाषाविज्ञान के अनुप्रयोगात्मक पक्ष को समझाना। 5.साहित्य अध्ययन में भाषाविज्ञान की उपयोगिता समझाना
2C पठकथा लेखन
1. सृजनात्मकता एवं संभाषण कला 2.कहानी लेखन कला और पद्धति अवगत करना. 3.साहित्यशास्त्र एवं भाषाविज्ञान से परिचय
Semester-VI
G-3 गजल विद्या और पत्राचार
1.छात्रों को गजल साहित्य से अवगत करना।

2. छात्रों को गजलकार व्यक्तित्व से अवगत करना।

3. छात्रों में मूल्यांकन की दृष्टि का विकास करना।

4. छात्रों को सरकारी पत्र लेखन से अवगत करना।

DSE-1D (S3) हिंदी साहित्य का इतिहास

1. आधुनिक काल की पृष्ठभूमि से छात्रों अवगत कराना।

2. भारतेंदु युगीन, द्विवेदी युग के काव्य की विशेषताओं से छात्रों को अवगत कराना।

3. आधुनिक काल के रचनाकारों और रचनाओं से परिचित कराना।

4. हिंदी गद्य के उद्भव और विकास से छात्रों को अवगत कराना।

SEC-2D साहित्य और फिल्मांतरण

छात्रों को फिल्मोसे परिचित करना।

छात्रों को साहित्यशास्त्र और फिल्मोके संबंध से परिचित करना।

हिंदी उपन्यास को फिल्मोमे रूपांतरित करना।

2D-S4 हिंदी भाषा और उसका विकास

1.भाषाविज्ञान के स्वरूप का परिचय देना।

2. छात्रों को भाषाविज्ञान की व्याप्ति समझाना।

3. भाषाविज्ञान के अध्ययन की दिशाओं का परिचय देना।

4. भाषाविज्ञान के अनुप्रयोगात्मक पक्ष को समझाना।

5. साहित्य अध्ययन में भाषाविज्ञान की उपयोगिता समझाना।

Name of Faculty	***Faculty Of Humanities***
Name of Department	***English***
UG Program	***B.A.English***

Program (POs) : *After completion of program students will,*

PO1:Critically and analytically read works of literature produced in many different cultures and historical periods.
PO2:Employ a variety of methods to respond to evaluate, analyze and understand literary and nonliterary texts.
PO3:Examine various literary techniques that writers use in constructing their texts,and demonstrate an understanding of these techniques.

PO4:Increase creativity in constructing different literary forms.
PO5:Development of sensitivity and respect towards English literature.
PO6:Knowledge of poetry,short stories,drama,and prose will be increased..
PO7:Students will increase their awareness of correct usage of English grammer in writing and speaking.
PO8: Students summarize Language acquisition theory and research.
PO9: Students evaluate pedagogical materials.
PO10:Program helpful to build the multidimensional personality and able to correlate Languages with social sciences.

Programme Specific Outcomes (PSO)

PSO1: Useful in understanding the importance of English as international language .
PSO2: Program is helpful in realization of human values and development of sense of social services.
PSO3:To understand the importance literature in creating aesthetic, mental, moral, intellectualdevelopment of an individual and increasing a healthy society.
PSO4: To familiarize students with some excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English.
PSO5: To enable students to become competent and effective users of English in real life situations.
PSO6: To contribute to the overall personality development of the students.
PSO7: To instill humanitarian values and foster sympathetic attitude in the students.
PSO8: To train the students in practical writing skills required in work environment.
PSO9: To impart knowledge of some essential soft skills to enhance their employability.

Course Outcomes (CO): T.Y.B.A.

ENG CC- Compulsory English(Sem.V and VI)

CO1. Students will familiarize with some excellent pieces of prose and poetry in English so that they realise the beauty and communicative power of English.
CO2.Students will become competent and effective users of English in real life situations.
CO3.Course will contribute to the overall personality development of the students.
CO4. Students get trained in practical writing skills which required for practical life.
CO5. Essential soft skills will enhance employability of students.
CO6. Competence developed among the students for self-learning.
CO7. Students will familarize with excellent pieces of prose and poetry in English so that they realise the beauty and communicative power of English
CO8.Students develop interest in reading literary pieces.
CO9. Students will expose to native cultural experiences and situations in order to develop humane values and social awareness
CO10. Overall linguistic competence and communicative skills of the students will developed.

ENG DSC-1Cand DES-1D- Appreciating Novel

CO1.students will understand the basics of novel as a literary form.
CO2.Students will expose to the historical development and nature of novel.
CO3.Literary sensibility and sense of cultural diversity in students will be developed.
CO4. Students will become aware of different types and aspects of novel.

CO5. Students will familarize with some of the best examples of novel.
CO6. Students will studyand familiarize with the terminology in novel Criticism (i.e. the terms used in Critical Analysis and Appreciation of novels) .
CO7. Students will encourage to make a detailed study of a few sample masterpieces of English novels from different parts of the world .
CO4.Students will appreciate and analyze novel independently.
CO5.To enhance students awareness in the aesthetics of Drama and to empower them to evaluate drama independently

ENG DSE-2CandDSE-2D-Introduction To Literary Criticism

This Course Useful ,
CO1. To introduce students to the basics of literary criticism
CO2. To make them aware of the nature and historical development of criticism
CO3. To make them familiar with the significant critical approaches and terms
CO4. To encourage students to interpret literary works in the light of the critical approaches
CO5. To develop aptitude for critical analysis.

ENG SEC-1 Cand SEC-1D- Enhancing Employability Skills

CO1. Course will helpful to identify the career opportunities suitable to them.
CO2. Students e understand the use of English in different careers.
CO3. Skills will enhanced required for placement of students.
CO4. Students will use English effectively in the career of their choice.
CO5. Course useful to exercise verbal as well as nonverbal communication effectively for Career of learner .
CO6. Students will become aware of career opportunities available to them.
CO7. Competence develop in students to use English for the career.

ENG SEC – 2C and SEC-D– Mastering Life Skills and Life Values

This Course is useful for,
CO1. To develop overall personality of the students
CO2. To train the students interpersonal skills.
CO3. To build self-confidence and communicate effectively
CO4. To train the students interpersonal skills
CO5. To learn stress management and positive thinking.
CO6. To enhance leadership qualities.
CO7. To aware the students about universal human values
CO8. To develop overall personality of the students.
CO9. To equip the students with the social skills

Name of Faculty	***Faculty Of Humanities***
Name of Department	***History(Social Sciences)***
UG Programme	***B.A. History***
Programme (POs)	

PO1: Student will learn motivational trends of Indian Freedom Movement and Nation Building

Process.

PO2: Students will be able to identify and decipher the Coins. This curriculum will help to develop research ability and Process of Research Paper Writing in History.

PO3: Students will be introduced to the information and importance of Historiography.

PO4: Student will develop the ability to analyze sources for 19th and 20th century Maharashtra History.

PO5: Demonstrate thinking skills by analyzing, synthesizing, and evaluating historical information from multiple sources.

PO6: Develop the ability to distinguish between fact and fiction while understanding that there is no one historical truth

Programme Specific Outcomes (PSO)

Program essential ,

PSO1:To help students to understand human behavior within historical context.

PSO2: To make students research applicable to social problems.

PSO3: To encourage students an appreciation and respect for cultural diversity in societies.

PSO4: Students can examine roles and responsibilities of groups, institutions in larger society

PSO5:To display understanding of complex relationship between human behavior in social context.

PSO6:To develop competency in understanding, critically assessing and using major historical concepts.

PSO7:Demonstrate through discussion understanding of cultural and historical issues.

PSO8:Recognize and write in accordance with a standardized system for formatting research papers.

PSO9:After completion of B.A. students have option to go for higher studies like M.A,MSW and can prepare for MPSC,UPSC competitive exams. .

PSO10: It will enable students to develop the overall understanding of the Modern World.

PSO11: The students will get acquainted with the Renaissance, major political, socio-religious and economic developments during the Modern World.

Course Outcomes (CO): T.Y.B.A.

Semester-V

CC- 3(3) Indian National Movement (1885-1947)

CO 1. The course is designed to make the students aware about the making of Modern India and the struggle for independence.

CO2. Students will become aware of the multi-dimensionality of Modern India.

CO 3. Students will study information which highlight the ideas, institutions, forces and movements that contributed to be shapingof Indian Modernity.

CO4. Students will acquaint with various interpretative perspectives.

CO5 It will enable students to develop an overall understanding of Modern India.

CO6 It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students.

CO7. Students will understand various aspects of the Indian Independence Movement and the creation of Modern India. Pedagogy: Lectures / Visual Presentation / Critical Analysis / Assi. It will enable students to develop an overall understanding of Modern India.

(DSE-3C)- (3 + 1)Course Title: Introduction to Historiography

CO1. Students will be introduced to the information and importance of Historiography.
CO2. Students will be introduced to the different Methods and Tools of data collection.
CO3. Students can study the interdisciplinary approach of History .
CO4. Students will learn about the usefulness of History in the 21st century, its changing perspectives, the new ideas that have been invented, and the importance of History in a competitive World.
CO5. This curriculum will develops Research ability and process of Research Methodology in History.
CO6. Students will learn to study history, write and understood history.
CO7. Students will understand methods and tools of data collection .
CO8. Students will understand the meaning of Evolution of Historiography.
CO9. Students will familarize with Various Views of Historiography.
CO10. Students will understand importance of inter-disciplinary research.
and acquaint with the recent research in History.

(DSE-4D)- (3 + 1 Maharashtra in the 19th Century

CO1. Student will develop the ability to analyse sources for 19th century Maharashtra History.
CO2. Student will learn significance of Regional History and Socio- religious reformism foundation of the region.
CO3. To orient the students with political history of Asia.
CO4. Students will understand the economic transition in Asia during 20th Centuries.
CO5. Students will understand the important developments in the 20th century Asia in a Thematic approach
CO6. Students will perceive different movements connected with Nationalist aspirations in the region of Asia in general.
CO7. Students will cope with the challenges of globalization.

(SEC 2 C) – South Indian Arts and Architecture

CO1.Students will understand the development of the Art and Architecturein South India.
CO2. They will understand the changing patterns of the Art and Architecture in SouthIndia.
CO3. They will understand the impact of Persian Art on Islamic Art and Architecture in South India Unit.

Generic Elecvtive

CO1.Students will understand about digital literacy.
CO2.Students will use digital technology in professional life and workplace.
CO3.Students will aware about civic action and social innovation.
CO4.Students will learn to conduct field survey for market.
CO5.Students will receive information about fundamental rights and duties of Indian Citizens.

Semester VI:

CC-India After Independence- (1947-1991)

CO1. Course will enable students to develop an overall understanding of the Contemporary India.
CO2. Course will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the students.
CO3. Students will understand various aspects of India's domestic and foreign policies that shaped Post-Independence India.

(DSE-3C) - Applied History

CO1. Students will be introduced to the information and importance of applied history.
CO2. Student will learn about the Historical significance of Archaeology and Archives and opportunities in the field of Archaeology and Archives.
CO3. Through this course, students will be informed about the opportunities in the field of Media,Museums.
CO4. Students will learn about the usefulness of history in the 21st Century, its changing perspective,the new ideas that have been invented, and the importance of the History in a competitive world .

(DSE-4D) History of Maharashtra in the 20thCentury

CO1. Student will develop the ability to analyses sources for 20th Century Maharashtra History.
CO2. Student will learn significance of regional history and Socio- Religious Reformism foundation of the region.
CO3. It will enhance their Perception of 20th Century Maharashtra.
CO4. Students will acquainted the skills of leadership and the Socio-Religious System of the Maharashtra.
CO5. Student will develop the ability to analyses sources for 20th Century MaharashtraHistory
CO6. Student will learn significance of regional history and Socio- Religious Reformism foundation of the region.

(SEC 2 D) Heritage Management

CO1. Student will understand over all process of Heritage Management
CO2. Student will get the knowledge about scope and the fact of Heritage Management.
CO3. Students will enable to understand about legal and commercial framework of Heritage
CO4.Students will percieve knowledge about methods of conservation of historical heritages.

Generic Elective

CO1.Students will learn about use of MS-office tools like paint,office,excel,power-point etc
CO2.Students will able to use internet facilities.
CO3Students will become aware of slum problems faced by peoples living in slums.
CO4.Students will receive knowledge about field report writing.

Name of Faculty	***Humanities (Mental, Moral and Social Sciences Faculty Of Humanities)***
Name of Department	***Political Science***
UG Programme	***B.A.Political Science***

Program Outcomes(POs)

Program will be useful for students in following aspects,

PO1:Political Science and Society**:** understanding the inter relationship between policy decisions and its effects on society.

PO2:Critical thinking: the ability to analyze and predict socio political phenomena based on the study of existing socio economic determinants and past experiences.

PO3: Effective citizenship: the course curriculum inculcates among students a basic understanding of the rights and duties of citizenship.

PO4: Communication: Establishment of linkages between academics and civil society.

PO5: Individual and team work: Function effectively as an individual and as a member/leader in different social settings.

Programme Specific Outcomes (PSO)

PSO1-Political Science and Society: understanding the inter relationship between policy decisions and its effects on society.

PSO2-Critical thinking: the ability to analyze and predict socio political phenomena based on the study of existing socio economic determinants and past experiences.

PSO3 - Effective citizenship: the course curriculum inculcates among students a basic understanding of the rights and duties of citizenship.

PSO4 - Communication: Establishment of linkages between academics and civil society

PSO5- Individual and team work: Function effectively as an individual and as a member/leader in different social settings.

PSO6- Government:Students will understand the government mechanism, its functions, duties and responsibilities.

PSO7-Political Affairs: Students will understand political system of the nation and international political affairs.

Course Outcomes (CO): T.Y.B.A.

Semester-V

CC- LOCAL SELF GOVERNMENT IN MAHARASHTRA

CO 1- To introduce the evolution of Local Self Government in Maharashtra.

CO 2- To make students aware about 73rd and 74th Constitutional Amendments.

CO 3- To introduce the students the structure of Local Self Government.

CO 4- To make students aware about composition, power and functions of local bodies

Contact Hours: 5.25 hrs. a week Tutorial: 9 hrs. Per Semester.

DSE-1C- PUBLIC ADMINISTRATION

This paper is an introductory course in Public Administration. The essence of Public Administration lies in its effectiveness in translating the governing philosophy into programmes, policies and activities and making it a part of community living. The paper covers personnel public administration in its historical context thereby proceeding to highlight several of its categories, which have developed administrative salience and capabilities to deal with the process of change. The recent developments and particularly the emergence of New Public Administrations are incorporated within the larger paradigm of democratic legitimacy. The importance of legislative and judicial control over administration

is also highlighted.
Contact Hours: 5.25 hrs. a week Tutorial: 9 hrs. Per Semester.

DSE-2C-INTERNATIONAL RELATIONS

This paper deals with concepts and dimensions of International Relations and makes an analysis of different theories highlighting the major debates and differences within the different theoretical paradigms. The dominant theories of power and the question of equity and justice, the different aspects of balance of power leading to the present situation of a unipolar world are included. It's highlights various aspects of conflict and conflicts resolution, collective security and in the specificity of the long period of the post second world war phase of the cold war, of Detent and Deterrence leading to theories of rough parity in armaments.
Contact Hours: 5.25 hrs. a week Tutorial: 9 hrs. Per Semester.

SEC 2C (2) SAMYUKTA MAHARASHTRA MOVEMENTSamyukta Maharashtra Movement SEC-Samyukta Maharashtra Movement

CO1. Students will familarize the political process in Maharashtra with special reference to regionalism sub-regionalism and Samyukta Maharashtra Movement.
CO2. students will understand both the historical evolution of Maharashtra's politics and different analyses of politics of the state.
CO3. Students will familarize with the main issues and concerns in the public life of a regional society as it shaped in the concept of colonialism, nationalism and modernity

Course Outcomes (CO): T.Y.B.A.

Semester-VI

CC- LOCAL SELF GOVERNMENT IN MAHARASHTRA

CO 1- To introduce the evolution of Local Self Government in Maharashtra.
CO 2- To make students aware about 73rd and 74th Constitutional Amendments.
CO 3- To introduce the students the structure of Local Self Government.
CO 4- To make students aware about composition, power and functions of local bodies
Contact Hours: 5.25 hrs. a week Tutorial: 9 hrs. Per Semester.

DSE-1D- PUBLIC ADMINISTRATION

This paper is an introductory course in Public Administration. The essence of Public Administration lies in its effectiveness in translating the governing philosophy into programmes, policies and activities and making it a part of community living. The paper covers personnel public administration in its historical context thereby proceeding to highlight several of its categories, which have developed administrative salience and capabilities to deal with the process of change. The recent developments and particularly the emergence of New Public Administrations are incorporated within the larger paradigm of democratic legitimacy. The importance of legislative and judicial control over administration is also highlighted.
Contact Hours: 5.25 hrs. a week Tutorial: 9 hrs. Per Semester.

Semester VI DSE 2 D (3)+1 INTERNATIONAL RELATIONS

This paper deals with concepts and dimensions of International Relations and makes an analysis of different theories highlighting the major debates and differences within the different theoretical paradigms. The dominant theories of power and the question of equity

and justice, the different aspects of balance of power leading to the present situation of a unipolar world are included. It's highlights various aspects of conflict and conflicts resolution, collective security and in the specificity of the long period of the post second world war phase of the cold war, of Detent and Deterrence leading to theories of rough parity in armaments.

Contact Hours: 5.25 hrs. a week Tutorial: 9 hrs. Per Semester.

SEC 2D (2) SAMYUKTA MAHARASHTRA MOVEMENT

This Course is an introduction to the political process in Maharashtra with special reference to regionalism sub-regionalism and Samyukta Maharashtra Movement. The aim of the course is that students are expected to understand both the historical evolution of Maharashtra's politics and different analyses of politics of the state. It tries to rincipa students with the main issues and concerns in the public life of a regional society as it shaped in the concept of colonialism, nationalism and modernity.

Students will use all above content for their studies

Name of Faculty	***Science and Technology***
Name of Department	***Geography***
UG Programme	***B.A. Geography***

Programme Outcomes(POs)

PO1: Define and develop the interdisciplinary approach through the study of Geography
PO2: Enhance employability and entrepreneur skills among the students.
PO3: Demonstrate and appreciate the importance of diverse cultural, economic, regional, and resources perspective.
PO4: Realization the importance of relation between Geography and various branches of Humanities, mental moral sciences.
PO5: Demonstrate and understand the important concept and theories in the field of Geography

Programme Specific Outcomes (PSO)

PSO1: Demonstrate knowledge of physical and cultural features of the earth surface.
PSO2: Define basic disciplines of Geography and its sub branches.
PSO3: Discuss the basic concepts and terminologies used in Geography like interior of the earth, plate tectonic, sea floor spreading, population growth, disasters, composition and structure of atmosphere, hydrosphere, etc.
PSO4: Distinguish between minerals and rocks, weather and climate, interior of the earth, basic industries, farming etc.
PSO5: Describe the causes and effects of local, national and international problems like global warming, acid rain, ozone depletion, soil degradation, deforestation etc

PSO6:Encourage to develop overall personality with soft skills and vocational competence among the students
PSO7: Enhance and rediscover knowledge skills and holistic approach towards life.

Course Outcomes (CO): T.Y.B.A.

Semester-V

Gg.310 A Geography of Tourism- I CC1E

CO1.Students will understand the history and importance of tourism.
CO2. Students will introduce the basic concepts in Tourism Geography
CO3. Students will understand the types of Tourism.
CO4. Course will increase knowledge in different aspects of Tourism Geography

Gg.320 –Geography of India –I DSE 1 C

CO1. Explain the importance of geography of our Nation.
CO2. Make the aware of the magnitude of problems and Prospects at National level.
CO3. Identify the inter relationship among the subject and the society.
CO4. Understand the current trends in regional studied
CO5. Realize about diversity of our nation i.e. Religious, Languages, Tribes etc
CO6. Acquaint the knowledge about different types of resources and their utility.

Practical Geography –I(Techniques of Spatial Analysis) DSE- 2 C

CO1. To introduce the basic concepts and techniques of Geographical Analysis.
CO2. To introduce the students with SOI Toposheets and acquire the Knowledge of Toposheet interpretation.
CO3. To introduce the students with Weather Maps and acquire the Knowledge of its interpretation and their applications .
CO4. To introduce the students with Aerial Photographs and Satellite Images and acquire knowledge to interpret it .
CO5. To acquaint students with the spatial and structural characteristics of Practical Geography.
CO6. To explain the elementary and essential principles on field of practical work.
CO7. Identify different methods of Relief Representation
CO8. Apply Remote Sensing Techniques in Geography

SEC 2- C-V- Research Methodology – I

CO1. To develop the understanding of the basic concept of research.
CO2. To develop the understanding of the basic framework of sampling and data collection
CO3. To develop the understanding of various sampling methods and techniques
CO4. To identify various sources of information about data collection.
CO5. Understanding of the conducting survey on various issues and develop the Report writing skill.

Semester-VI

Gg.310 Geography of Tourism- II CC1F

CO1. To understand the activities and accomodation types of Tourism
CO2. To introduce the students to the basic concepts in Tourism Geography.
CO3. To understand the types of Tourism
CO4. To gain knowledge different aspects of Tourism Geography.
CO5. The students will able to integrate various factors of economic development and dynamic aspect of tourism geography.
CO6. Understand the planning and policy of tourism word wide.
CO7. To make aware the students about some Hill Station, Historical and National Parks

Gg.320 –Geography of India –II DSE1 D
CO1.Acquaint the importance of geography of our Nation. CO2. Make the aware of the magnitude of problems and Prospects at National level. CO3. Identify the inter relationship among the subject and the society. CO4. Understand the current trends in regional studied CO5. Realize about diversity of our nation i.e. Religious, Languages, Tribes etc CO6. Acquaint the knowledge about different types of resources and their utility
Practical Geography- II (Techniques of Spatial Analysis, Surveying and Excursion /Village/ Project Report) DSE- 2 D
CO1. Create the awareness about the open source software and techniques of visualization CO2. Describe basic of Statistical data and the skill of data representation CO3. Calculate Central Tendency, Variance and Standard Deviation, Correlation and Regression, and Testing of Hypothesis CO4. Conduct Survey of socio-economic conditions of a village/ field investigation and report writing
SEC 2- D- Research Methodology – II
CO1. To develop the understanding of the basic concept of research CO2. To develop the understanding of the basic framework of sampling and data collection CO3. To develop the understanding of various sampling methods and techniques CO4. To identify various sources of information about data collection. CO5. Understanding of the conducting survey on various issues and develop the Report writing skill
Learning Outcomes

Name of Faculty	***Commerce***
Name of Department	***Commerce***
UG Programme	***B.Com***

Program Outcomes(POs)
PO1: Enables learners to get theoretical and practical exposure in the commerce sector which includes Accounts, Commerce, Marketing, Management, Economics, Environment etc. **PO2 :** Develops communication skills and build confidence to face the challenges of the corporate world. **PO3:** Enhances the capability of decision making at personal and professional levels. **PO4:** Makes students industry ready and develop various managerial and accounting skills for better professional opportunities. **PO5 :**Develops entrepreneurial skills amongst learners. **PO6 :** Learners can pursue careers as financial experts and also develop a better understanding of the markets as this course gives an in-depth understanding of the essential qualities and areas of expertise required for such jobs. **PO7:** The program aims to develop professional skills among students and build a strong foundation in accounts, Finance and Ethics which will benefit themselves as well as the society

Program Specific Outcomes(PSOs)

PSO1: Learners venture into Managerial positions, Accounting areas, Banking Sectors, Auditing, Company Secretaryship, Teaching, Professor, Stock Agents, Government Employment etc.

PSO2: Enables learners to prove themselves in different Professional examinations like CA, CS, CAT, GRE, CMA, MPSC, UPSC etc.

PSO3: Learners further move towards research in the field of Commerce.

PSO4: Enables students to demonstrate Progressive learning of various tax issues and tax forms related to individuals and businessmen and setting up their own business start up.

PSO5: The vast syllabi covers various fields of commerce and accountancy which helps students grasp practical and theoretical knowledge

PSO6: Students will acquaint about fundamentals, principles, practical skills and recent developments in the subject area.

PSO7: The course helps aspirants to acquire knowledge in the field of accounting, taxation, auditing, risk management, financial accounting, managerial economics, business law and business communications.

PSO8: Students will get opportunities to explore many career paths like investment and portfolio management, stock market, security analysis, mutual fund and capital market analysis, accounting field, financial field etc.

.**PSO9:** Course will inspire and boost interest of the students towards Commerce as the main subject and understand global issues.

PSO10: Course will create foundation for advanced studies, research and development in Commerce.

Course Outcomes (CO): T.Y.B.Com.

Semester-V

351: Business Regulatory Framework-I

CO1. Students will develop the basics in rules and regulations applicable to business.

CO2. Students will understand importance of legal aspects in business environment.

CO3. Students will familiarize with basic provisions of the different laws applicable to business organizations.

352 : Advanced Accounting-I

CO1. Students will understand procedure of accounting of banking companies.

CO2. Students will acquaint the different accounting treatment in different situation of banking companies.

CO3.Students will perceive overall practical knowledge in finalization of the accounts of banking companies.

353A: Indian and Global Economic Development-I

CO1.Students will be able to understand present Economic Scenario of Indian Economy as well as World Economy.

CO2.Students will be able to understand the various aspects of development in Agricultural,

Industrial and service sector in India.
CO3. Student will be able to critically evaluate the role of India in international economy.
CO4. Students will be able to evaluate the working of international financial organization and Institutions.
CO5.Students will know emerging issues in policies of India's foreign trades.

354: Auditing and Taxation I

CO1. Students will acquaint the need and importance of basic concepts in auditing and taxation.
CO2. Students will understand the tax structure and procedure.
CO3.Students will develop awareness in calculating tax liability.
CO4.Students will learn about preparation of audit report.

355E: Cost and Work Accounting II

CO1.Students will understand various methods of Costing and their applications to provide knowledge about the concepts and principles of overheads.
CO2.Students will train with different concepts, procedures, and legal provisions of cost audit.

356E: Cost and work Accounting III

CO1Stdents will become aware of principles conceptsand principles applications of overheads.
CO2 Students will recieve knowledge about the concepts and principles of overheads.
CO3. Students will acquaint the cost accounting standards and the cost accounting standard board.
CO4. Students will understand the stages involved in the accounting of overheads.
CO5. Students will develop an ability towards strategic overhead accounting under activity based costing.

Semester-VI

361: Business Regulatory Framework-II

CO1. Students will develop the basics in rules and regulations applicable to business.
CO2. Students will understand importance of legal aspects in business environment.
CO3. To introduce basic provisions of the different laws applicable to business organizations.

362 : Advanced Accounting-II

CO1.Students will become aware of various accounting concepts.
CO2.Students will collect knoelege about different accounting procedures, methods and techniques.
CO3.Students will learn practical approach to accounts writing by using software package.

363A: Indian and Global Economic Development-II

CO1.Students will develop new approach to study Indian Economy.
CO2.Student will able to analyse present status of Indian economy.
CO3.Students will understand process of integration of Indian economy with other economies of world.

364: Auditing and Taxation II

CO1.Students will become aware of principles themselves about concepts and principles of

auditing and audit process.
CO2.Students will understand basic concepts and knowledge of computation of income, income tax return,Tax collection principals under Income Tax Act,1961.

365E Cost and Work Accounting II.

CO1. Students will understand various methods of Costing and their Applications.
CO2.Students will trained with different concepts, procedures,and legal provisions of cost audit.
CO3.Students will perceive knowledge about the concepts and principles of overheads.
CO4. Students will introduce the cost accounting standards and the cost accounting standard board.
CO4. Students will understand the stages involved in the accounting of overheads.
CO5. Students will develop ability towards strategic overhead accounting under activity based costing

366E Cost and work Accounting III

CO1.Students will understand various methods of Costing and their Applications
CO2.Students will understand about the concepts and principles of overheads.
CO3.Students will trained with different concepts,procedures,andlegal provisions of cost audit.

Name of Faculty	***Science and Technology***
Name of Department	***Chemistry***
UG Program	***B.Sc***

Program Outcomes(POs)

PO1: This paper will presents the basic principles of chemistry
PO2: Students will acquaint with working knowledge of the main area of chemistry organic, inorganic, physical, analytical and all other related
PO3: Students will understand the important concepts of chemistry
PO4: Students will be able to perform and understand chemical reactions.
PO5:Students will familiarize with the study of the compositions structure ,properties, and reaction of matter.
PO8: Course will helpful to understand work in a chemical related field.
PO9: Students will apply and demonstrate knowledge of essential facts, concepts, laws, principles and theories related to chemistry.
PO10.Course will helpful to demonstrate laboratory skills, enabling them to perform qualitative and quantitative analysis of given samples and able to make conclusions on it.
PO11.Course will helpful to engage in oral and written scientific communication, and will prove that they can think and work independently.
PO12.Students will Plan execute of design experiment, make documentation of it, interpret data at entry level of chemical industry and report the results

Program Specific Outcomes(PSOs)

PSO1. Students will acquaint with fundamentals, principles, practical skills and recent developments in the subject area.
PSO2 . Students will inspire and boost interest of the students towards chemistry as the main

subject and understand global issues.

PSO3. Course will helpful to create foundation for advanced studies, research and development in Chemistry

PSO4. Course will helpful to understand the nature and basic concepts of Physical, Organic and inorganic chemistry.

PSO5.Students will study to analyze Organic and inorganic compounds qualitatively and quantitatively.

PSO6. Students will understand the applications of physical, organic, inorganic and analytical chemistry in pharmaceutical, agriculture and chemical industries.

PSO7.Students will able to perform experimental procedures as per laboratory manual in the area of physical, Inorganic and organic chemistry.

PSO8.Students will tansfer and apply the acquired fundamental knowledge of chemistry, including basic concepts and principles of (i) Physical, Analytical Chemistry, organic chemistry, Inorganic chemistry and biochemistry; (ii) analytic techniques and experimental methods for chemistry to study different branches of chemistry;(iii)The Periodic Table of the Elements and represent key aspects of it and its role in organizing chemical information.

Course Outcomes (CO): T.Y.BSc.

Semester-V

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

CO1. The developments in the wave mechanics against classical mechanics towards understanding of exact nature of an atom and bonding in molecules.

CO2. The students and researchers will be able to elucidation the molecular structure with the aid of spectroscopy.

CO3. The phenomenon underlying the photochemical reactions and quantification of energy.

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

CO1. Chemical analysis using quantitative and qualitative methods.

CO2. Advancements in quantitative analysis-Instrumental approach.

CO3. Applications of spectroscopy tools in chemical analysis with respect to industrial developments.

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

CO1. Students will learn to estimate Fe^{3+} ions by thiocynate method.

CO2. Students acquaint with titration of a mixture of weak acid and strong acid with strong alkali and titration of Cu^{2+} ions with EDTA photometrically.

CO3. Students will familiarize with Spectrophotometry and Colorimetry.

CO4.Students will perform determination of molecular weight of higher polymer.

CO5.Students will determine molecular refractivity of different liquids.

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

CO1.Students will clearly understand about the exact nature of M-L bond in coordination compounds, which has partly covalent and partly ionic character.

CO2. Students will familarize with the mechanism involved the reactions shown by various

salts and inorganic compounds.
CO3. Students will acquaint with Periodic properties of Transition and Inner Transition metals.

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

CO1.Students will become aware of Importance of processes in chemical industry,
CO2.Students will acquaint with basic chemicals, their uses and manufacturing process.
CO3. Students will familiarize with the physico-chemical principals involved in manufacturing sugar.
CO4.Students will learn about fermentation Industry, its importance, basic requirement of fermentation process, manufacturing of ethyl alcohol by using molasses and fruit juice.
CO5.Students will familiarize with different types of soap products and detergents, Chemistry of soap and detergents.
CO6. Students will know about dyes intermediates,structure of dye,classification of dyes, structure,synthesis of dyes
CO8. Students will aware about classification and general properties of pigments , Production processes of zinc oxide and iron oxide.

DSEC-II: CH-506: Inorganic Chemistry Practical - I

CO1.Students will able to perform Gravimetric estimation of Fe as Fe_2O_3.
CO2. Students will complete analysis of sodium bicarbonate from mixture by thermal decomposition method
CO3.determination of water of crystallization by thermal decomposition.
CO4.Students will familiarize with preparation of inorganic complexes and spot tests for metal ions and ligands like: Preparation of Potassium trioxalatoferrate(III), K3[Fe(C2O4)3] and Preparation of Potassium dioxalatocuprate(II),[Cu(C2O4)2]
CO5. Students will experimentally study,i) Limit test for iron, chloride and sulphate from pharmaceutical raw materials.

DSEC-III: CH-507: Organic Chemistry - I

CO1.Students will Understand the polynuclear and heteronuclear aromatic compounds w.r.t. their characteristic properties.
CO2. Students will acquaint with the reactions and mechanisms shown by organic compounds.
CO3.Students familarize with the mechanism of some named rearrangement reactions and their applications Electrocyclic rearrangement with their mechanisms.
CO4.Students will complete study of Orientation and reactivity in E1, E2 elimination and effect of factors on the rate elimination reactions.

DSEC-III: CH-508: Chemistry of Biomolecules

CO1. Introduction of molecules involved in the life of living organisms.
CO2. Role of chemical molecules and their physiological reactions involved in the cells
CO3.Students familarize with types of carbohydrates,lipids,,protein structures.
CO4.Students will acquaint with different enzymes and their applications.
CO5. Students will acquaint with basic concepts of endocrinology, types of Endocrine glands and their hormones, biochemical nature of hormones, mechanism of action of lipophilic and hydrophilic

hormones .
DSEC-III: CH-509: Organic Chemistry Practical-I
CO1.After completion of this course students will be able to, Perform the quantitative chemical analysis of binary mixture. CO2.Students will separate and analyse mixture of acid-neutral,base-neutral andphenol-neutral. CO3.Students will separate and analyse mixture of neutral-neutral. CO4. Understand the purification technique used in organic chemistry.
CH-510 (B) : Polymer Chemistry
CO1.Students will acquaint with History of Polymers. CO2.Students will understand Polymerization. CO3.Students familarize with Nomenclature and types of polymers. CO4.Students become aware of Polymerisation tecniques. CO5. Important polymers,their applications and advantages.
CH-511 (A) : Environmental Chemistry
CO1.Students will aware of Concept of environmental chemistry and importance of biogeochemical cycles CO2.Students complete study of Chemicals causing environmental pollution. CO3. Students will understand water quality using analysis of water. CO4.Students familarize with remedies and methods to avoid/minimize the pollution and waste water treatments. CO5.Students will acquaint with importance and conservation of environment.
SEMESTER-VI
DSEC-IV: CH-601 : Physical Chemistry-II
CO1. Students will understand electrochemical cells and energetics. CO2. Students will complete study of Crystal structure and basic crystal systems and methods of analysis of it. CO3.Students will able to distinguish between crystalline and amorphous solids / anisotropic and isotropic solids CO4.Students will familarize with nuclear reactions and applications of radioactive elements in analysis. CO5.Students will complete study of Radioactivity. Application of radioisotopes as a tracer.
DSEC-IV: CH-602 : Physical Chemistry-III
CO1. Students will understand properties of solutions. CO2. Students will complete study of Solid state reactions: Kinetics. CO3. Students will acquaint with Electronic structures of materials and applications in conductivity. CO4. Students will familarize with Polymers and their properties.
DSEC-IV: CH-603 : Physical Chemistry Practical-II
CO1. Students will able to determine the molecular weight of solute by depression in freezing point method . CO2.Students will determine amount of ions in mixture by potentiometer titration method.

CO3.Students will determine degree of hydrolysis by PH-metry.
CO4.Students will perform determination of Pka valu of weak acids with strong bases.

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

CO1. Students will understand M-C bond and to define organometallic compounds
CO2. Students will define organometallic chemistry
CO3. Students will understand the multiple bonding due to CO ligand.
CO4. Students will learn methods of synthesis of binary metal carbonyls.
CO5. Students will understand the structure and bonding using valence electron count .
CO6. Students will understand the catalytic properties of binary metal carbonyls.
CO7. Students will understand the uses of organometallic compounds in the homogenous catalysis.

DSEC-V: CH-605: Inorganic Chemistry -III

CO1. Students will Underst acid-base properties of inorganic compounds.
CO2.Students familarize with Ionic solids, structure and radius ratio effect.
CO3.Students will able to draw the simple cubic, BCC and FCC structures
CO4.Students will identify the C.N. of an ion in ionic solid and effect of radius ratio in determining the crystal structure
CO5. Inorganic materials, properties and their applications.
CO6.Students swill familiarize with Various methods of nanoparticle synthesis ,applications of nanoparticles,and carbon nanotube

DSEC-V: CH-606: Inorganic Chemistry Practical-II

CO1.Students will able to Volumetric Estimations like, Analysis of Calcium from milk powder.
CO2.Students will able to perform Estimation of Na and K by flame photometry by calibration curve method.
CO3.Students will estimate iodine from iodosed salt.
CO4.Students will find out strength of medicinal H_2O_2.

DSEC-VI: CH-607: Organic Chemistry-II

CO1.Students will familarize with applications of spectroscopy in the determination of structure of organic compounds.
CO2.Students will acquaint with Stereochemistry of cyclic compounds, Use of models to draw different types of disubstituted cyclohexanes in chair form .
CO3. Students will able to explain geometrical isomerism in disubstituted cyclohexanes.
CO4.Students will able to Use models and to draw different types of conformational isomers of decalin in chair form and know the stability of geometrical isomers of decalin
CO5. Students will learn the interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters..

DSEC-VI: CH-608: Organic Chemistry-III

CO1. Synthetic routes and mechanisms for the organic compounds.
CO2. Different reagents useful for organic synthesis.
CO3. Isolation, purification and classification of some natural products like Terpenoids and

Alkaloids
CO4.Students will acquaint with,preparations and application of reagents,

DSEC-VI: CH-609: Organic Chemistry Practical-II

CO1.Students will able to determine the structure of organic compound and the functional groups using given NMR and IR spectrum.
CO2. Students will be able to estimste glucose.
CO3. Students will be able to estimste glycine.
CO4.Students will able to extract caffin from tea leaves and Eugena from cloves.
CO5. Students will acquaint with method of separation of O-nitrophenol and P-nitrophenol by Column chromatography.

CH-610 (A) : Chemistry of Soil and Agrochemicals

CO1.Understanding of soil and laboratory methods of soil analysis.
CO2.Understand the reclamation and management of soil physical and chemical constraints
CO3. Fertilizers and their applications.
CO4. Use of pesticides in protection of plants.
CO5. Familarize with different pesticides, their nature and, mode of action and their fate in soil so as to monitor their effect on the environment.

CH-611(A): Analytical Chemistry-II

CO1.Students acquaint with Quantitative methods of analysis-Solvent extraction like chromatography,HPLC,GC etc.
CO2.Students will understand important instrumental methods mostly used in Industrial analysis.
CO3.Students will compare among the different analytical terms, process and analytical methods like HPLC,spectrophotometer,flurometer etc.
CO4.Students will demonstrate theoretical principles with help of practicals.
CO5. Students will apply whatever theoretical principles he studied in theory during practical in laboratory

Name of Faculty	***Scienceand Technology***
Name of Department	***Physics***
UG Programme	***B.Sc Physics***

Program Outcomes(POs)

After successfully completing B.Sc. Physics Programme students will be able to:
PO1. **Scientific Knowledge**- Students will have deep knowledge of the theoretical concept and development of scientific temperament, critical thinking and reasoning ability.
PO2.**Employability tool**- Acquire employment in private /government sectors or become a entrepreneurs.
PO3.**Problem analysis and Solutions**- Graduate Students are capable to resolve the various types of problems encountered at work place and various examination problems.
PO4.**Professional identity**- The program ensures students role in various sectors like IT-industries, Engineering, civil and defense services, Government organization, education and

research area and self-employment.

PO4.**Scientific ethics-** The program developed the scientific ethics like Justice, honesty, empathy, compassion, respect, responsibility among the students.

PO5.**Personality enhancement**- The program developed the different abilities like planning about carrier, scientific thinking, time management, leadership and communication, practical and research skill.

PO6.**Interdisciplinary approach**- Program developed this approach for scientific research.

PO7.**Core competency**- Students shall acquire core competency in the principal subject Physics and also allied subjects like Botany , Zoology , Mathematics Electronics and Chemistry

PO8.**Experimental skills**- Inculcate of experimental skills, data analysis, interpretation and applications.

PO9.**Encounter challenges**- Students are eligible to face the challenges in scientific and research field, industries and environmental field.

PO10. **Computational Temper**- Competent for higher education, various entrance examinations, Competitive examinations for employment.

PO11.**Opportunity in higher education-** Join the higher studies in various advanced related fields or allied fields.

Program Specific Outcomes (PSO)

After successful completion of B.Sc. Physics Course student will be able to:

PSO1. Students will be able to develop understanding skills, knowledge of basic concepts in Physics, imagination power, wide area of applications in various streams of subject.

PSO2. Student gain Scientific and technological knowledge of Science stream.

PSO3.Students are eligible to accepts future challenges in scientific field, industries, environment and society.

PSO4. Students are also eligible to strikes the opportunities in scientific and technological word.

PSO5. Students will be able to apply the laws of Physics in real life situations to solve the problems.

PSO6. Students develop aptitude of doing research through undertaking small projects.

PSO7. Student will have developed inter disciplinary approach and can pursue higher studies in subjects other than Physics.

PSO8. Student can acquire knowledge in mathematics needed for a proper understanding of Physics.

PSO9. Students have acquired laboratory skills, enabling them to take measurements of Physical quantity, its analysis and conclusions.

PSO10. Students will gain observational tool useful in daily life.

PSO11. Able to do the critical thinking in addressing the various scientific and/or technological issues and their validation intellectually, organizationally or personally.

Course Outcomes (CO): T.Y.BSc.Physics

Semester-V

PHY-351: Mathematical Methods in Physics-II
CO1. Learns different coordinate system, differential equations and transformation equations. CO2: Learns about the relation of relativity and Galilean and Lorentz transformation equations CO3: Learns about partial differential equations, method of separation of variables and finding singular points for given differential equations and power series solutions. CO4: Learns the properties of generating function
PHY-352: Electrodynamics
CO1: Understand the Laws of Magnetostatics. CO2: Understand Magnetic susceptibility. CO3: Understand the Maxwell's equations and its application in daily life. CO4: Understand the concept of Paramagnetic,Diamagnetic and Ferromagnetic substances.
PHY-353: Classical Mechanics
CO1: Understand the Newton's laws, its applications, center of mass, system of particles, momentum and energy of particles, central force, Kepler's laws, concepts of frame of references, two body problem and artificial satellite CO2: Understand the scattering of particles, its types, scattering angles, center of mass, cross section CO3: Understand the concept of Langrangian andHamiltonian its applications, Types of constraints, degrees of freedom, generalized coordinates, configuration space, D' Alembert's principle, phase space CO4: Understand the concept of canonical transformation and problems, Poisson's Bracket, Jacobi identity
PHY-354: Atomic and Molecular Physics
CO1: Understand the basics of atomic structure and atomic transitions CO2: Couple the orbital and spin angular monenta in the form of LS and JJ coupling schemes and apply it to He atom CO3: Understand Zeeman and Stark effects , X- ray spectroscopy and molecular spectroscopy CO4: Draw electronic spectra of molecules and study of Raman effect and its applications
PHY-355: Computational Physics
CO1: Understand the development in the Lower to higher level languages. CO2: Learn to develop Algorithms and Flowcharts for various programing problems . CO3: Learn to use loops, control statements, arrays, functions , pointers in programming and graphics. CO4: Learn to use numerical method to solve integration and to find roots of the equation.
PHY-356 Elective-I (B): Elements of Material Science
CO1: Understand different forms of solids and focus on crystallography and their defects CO2: Understand the concept of diffusion , the law governing diffusion i.e., Fick's law and phase diagram of different alloys CO3: Understand different molecular phases and properties of ceramic materials

CO4: Understand applications of smart materials

PHY-357: Physics Laboratory-3A

Students will able to perform independently,

1. Moment of Inertia by Bifilar suspension

2.Young's modulus by Koeing method

3. Surface tension of mercury by Quincke's method

4.. Determination of wavelength of light by Michelson's interferometer

CO2.Students will complete study of,

1. Self-Inductance by Anderson's bridge

2. Self-Inductance by Maxwell's bridge

CO3.Students will able to explain,

1. Llyod's mirror

2. Determination of Resolving Power of grating

3. Determination of wavelength by Constant deviation spectrometer

PHY-358: Physics Laboratory-3B

CO1.Students will able to demonstrate.

1. Charging and discharging of capacitor and RC time constant
2. Measurement of g using simple pendulum
3. Velocity of sound
4. Radiation detection
5. IV Characteristics of diode

CO2.Students will able to interpret,

1. Factorial of a number by simple and recursive method.
2. To find out the first 100 prime numbers

CO3.Students will able to solve,

1. Roots of an algebraic equation (Bisection)
2. Roots of polynomial (Newton Raphson)
3. Numerical Integration by Trapezoidal rule
4. Numerical Integration by Simpson's 1/3 rule

PHY-359: Physics Project-I

CO1.Students will learn procedure to complete projects in Physics or interdisciplinary areas.

CO2. Students will learn the basics of the topic chosen for project, to learn how to do literature survey and set up the basic experimental/theoretical and computational techniques needed for the project.

CO3. The department will encourage to students for projects both in experimental and theoretical areas of Physics.

CO4.Students will able to Present project in the form of viva.

PHY-3510 SEC (H): Python Programming

Course outcomes:
After completion of this course student will be able
CO1. To write code for complex scientific computational requirement.
CO2. Use Libraries like NumPy for numeric computation
CO3.Use Library SciPy for scientific and technological calculations
CO4.Use Library Matplotlib for plotting of graph and its visualization.
CO5.Develop own functions for Physics or mathematics

PHY-3511 SEC (L): Physics Workshop Skill

CO1.After completion of this course students will able to handle and test various instruments, Principle and working of digital meters. Comparison of analog and digital instruments, Characteristics of a digital meter
CO2.Students will understand Specifications of a multimeter and their significance ,Principles of voltmeter, Construction.
CO3.Students will familiarize with specifications of an electronic voltmeter and their significance
CO4.Students will complete study of Special features of dual trace oscilloscope ,introduction to digital oscilloscope, Block diagram and principle and working .
CO5. Students will understand block diagram, explanation and specifications of low frequency signal generators, Pulse generator, and function generator.

Semester-VI

PHY-361: Solid State Physics

CO1: Classify the 2D and 3D crystals, draw crystal planes calculate interplanar distance, packing fraction
CO2: Understand Bragg's different characterization techniques: XRD, TGA, SEM, UVVisible spectroscopy and their applications
CO3: Classify the solids using band theory of solids and the concepts of Fermi energy and Hall effect
CO4: Understand magnetic properties and classification materials, superconductivity and ferritesand their application

PHY-362: Quantum Mechanics

CO1: Understand the failure of classical mechanics, importance of quantum mechanics, concept of matter waves and the wave-particle duality.
CO2: Understand the consequence of duality as uncertainty principle.
CO3: Understand the physical interpretation of the wave equation and learns to write the different forms of the Schrodinger's equation.
CO4: Understand operator mechanism in quantum mechanics and be able to solve problems using the above

PHY-363: Thermodynamics and Statistical Physics

CO1: Understand the phenomena of viscosity, thermal conductivity and diffusion and apply it to the physical activities
CO2: Understand the new parameters related to thermodynamics state functions like internal energy, enthalpy etc. and their physical interpretation and significance to the given system and understand relation between them in the form of Maxwell's equations
CO3: Understand system of more number of particles where the probabilities and distribution functions are relevant to be calculated and understand concepts of ensembles and classify them
CO4: Understand different distribution laws based on concept of Quantum Statistic.

PHY-364: Nuclear Physics

CO1: Learn the basic properties of Nucleus, electric dipole moment and quadrupole moment and symmetry.

CO2: Study different types of radiations, their properties, medical and industrial applications of radioactivity. Radioactive disintegration and the laws of radioactive decay.

CO3: Classify the elementary particles. Learn the stability of nucleus based on nuclear forces, various detector and particle accelerators.

CO4: Learn about compound nucleus formation and calculates the energy evolved during such reactions. Understanding the concept of fission and fusion.

PHY-365 (A): Electronics-II

CO1: Understand the internal structure and material of regularly used electronic components like LED, Photo diode, varactor and optocoupler.
CO2: Understand the working of different classes of amplifier and be able to design amplifier using transistor.
CO3: Construct adder, subtractor, divider, comparator and integrator circuits using Operational Amplifier IC 741. Understand the most popular and versatile IC555 and its role as multivibrator.
CO4: Understand the principle and working of a regulator using different IC's, also design and construct one such regulator.

PHY-366 Elective-II (S): Lasers

PHY-366 Elective-II (S): Lasers

CO1. Student can understand construction and operation principle of laser
CO2. Student can learn different type of laser and its working principle
CO3.Student can learn different application of laser
CO4. Student can learn different properties and its research purpose

PHY-3610 SEC (W): Scientific Data Analysis using Python

After completion of course students will,
CO1. Know basic notions and definitions in data analysis.
CO2. Know standard methods of data analysis and information retrieval.
CO3. Be able to formulate the problem of knowledge extraction as combinations of data filtration, analysis

CO4. Be able to translate a real-world problem into mathematical terms.

PHY-3611 SEC (AA): Microcontroller

CO1.Students will familiarize with architecture.
CO2.Students will understand assembly language programming.
CO3. Students will acquaint with timers or counters and interrupt programming.
CO4.Students with familiarize with interfacing techniques.

PHY-367: Physics Laboratory-4A

CO1. Students will able to perform,

1. Surface Tension of Mercury by method of Ripples.
2. Hall Effect: To measure the Hall coefficient
3. Energy gap of a semiconductor
4. Resistivity by Four probe method
5. Platinum resistance thermometer

CO2.students will complete experimental performance of,
1- Verification of Stefan's fourth power law by bulb filament

CO3.Students will complete study of,

1. Characteristics of G.M. tube
2. e/m by Thomson method
3. Determination of Planck's constant

PHY-368: Physics Laboratory-4B

CO1. Students will complete study of,
1. Characteristics of JFET
2. Design and built astable multivibrator using IC 555/IC 741
3. Integrator and differentiator using IC 741

CO2.Students will understand ,
1. Instrumental amplifier using three op-amps
2. Schmitt trigger
3. Study of L.V.D.T.

CO3.Student will able to demonstrate ,
1. Frequency response of loudspeaker (twitter, woofer, mid-range)
2. Study of the characteristics of a laser beam.
3. Determination of the diameter of a thin wire using a laser beam.

PHY-369: Physics Project-II

CO1. Students will learn procedure to complete projects in Physics or interdisciplinary areas.
CO2. Students will learn the basics of the topic chosen for project, to learn how to do literature survey and set up the basic experimental/theoretical and computational techniques needed for

the project.

CO3. The department will encourage to students for projects both in experimental and theoretical areas of Physics.

CO4.Students will able to Present project in the form of viva.

Name of Faculty	***Scienceand Technology***
Name of Department	***Electronics***
UG Programme	***B.Sc Electronics***

Program Outcomes(POs)

PO1. The branch of Physics will help to study the emission and behavior of electrons.
PO2.After study of electronics students will understand applications of electronics for mobile phones, computers, televisions in daily life.
PO3.Students will familiarize use of electricity in working of refrigerators, conditioners, oven etc.
PO4.Electronics familiarize students about Electricity is flow of electrons is most widely form of energy essential part of life.

Program Specific Outcomes(PSOs)

PSO1	Ability to apply knowledge of mathematics and science in solving electronics related problems .
PSO2	Ability to design and conduct electronics experiments, as well as to analyze and interpret data.
PSO3	Ability to design and manage electronic systems or processes that conforms to a given specification within ethical and economic constraints
PSO4	Ability to identify, formulate, solve and analyze the problems in various disciplines of electronics
PSO5	Ability to function as a member of a multidisciplinary team with sense of ethics, integrity and social responsibility
PSO6	Ability to communicate effectively in term of oral and written communication skills
PSO7	Recognize the need for, and be able to engage in lifelong learning
PSO8	Ability to use techniques, skills and modern technological/scientific/engineering

Course Outcomes (CO): T.Y.BSc.Electronics

Semester-V

EL 351: Paper I: Digital Design using VERILOG

Course Outcomes: After completing the course, the students will be able to
CO1: Know and understand structure of HDL and Verilog.
CO2: Understand different modeling styles in Verilog.
CO3: Use Verilog effectively for simulation, verification and synthesis of digital system.
CO4: Understand basics of programmable logic devices

EL 352: Paper II: Microcontroller Architecture and Programming

Course Outcomes: After completing the course, the students will be able to
CO1: Understand the basics of microcontroller.
CO2: Acquire basic programming skills in C language.
CO3: Understand and acquire basic programming skills for AVR microcontroller

EL 353: Paper III: Analog circuit Design and Applications

Course Outcomes: After completing the course, the students will be able to
CO1: Understand basics of analog circuit design.

CO2: Analyze waveform generators required for testing different circuits.
CO3: Build application circuits using specialized ICs.
CO4: Design analog systems using available ICs

EL 354: Paper IV: Nanoelectronics

Course Outcomes: After completing the course, the students will be able to
CO1: Understand basic concepts of nano electronic devices and nano technology.
CO2: Understand the electron transport mechanism in nanostructures.
CO3: Understand techniques of characterization of nanostructures.
CO4: Understand different devices constructed using nanotechnology

EL 355: Paper V: Signals and Systems

After completion of course students will,
CO1: Know basics of electronic signals.
CO2: Know different types of systems.
CO3: Analyze systems using Laplace and Fourier analysis.
CO4: Understand digital signal processing system

EL 356(A): Paper VI(A): Optics and Fiber Optic Communication

Students will able,
CO1: To acquire Knowledge of optical fiber communication system.
CO2: To understand different parameters of optical fibers.
CO3: To learn essential optical components of Fiber Optic Communication.
CO4: To analyze and integrate fiber optical network components in variety of networking schemes

EL 357: Paper VII: Practical Course I

Students will able to,
CO1: Analyze different design and test procedures for analog circuits and systems.
CO2: Measure different parameters of optical fiber communication systems
CO3: Understand importance of product design and entrepreneurship.
CO4: Develop electronic systems for given application

EL 358: Paper VIII: Practical Course II

Students will able to,
CO1: Develop and simulate design digital systems using Verilog.
CO2: Design and develop AVR microcontroller based systems.
CO3: Understand different nanoelectronic devices.
CO4: inculcate basic skills required for design and development of embedded Systems.

EL 359: Paper IX: Practical Course III

Students will able to,
CO1: Understand basic methodology of selection of topic for project.
CO2: Understand how to do literature review for selected topic for project.
CO3: Apply the knowledge for design and development of the selected project.
CO4: Use different software and hardware for testing, validation and verification of circuits for successful outcome of project.
CO5: Understand documentation process in the form of presentation and project Report.
CO6: Understand process of systematic development of electronic system and

Development of skills for successful outcome
ELSEC 351: Paper X: SEC1: Electronic Design Automation Tools
Students will able to, CO1: Design the electronics circuits using EDA software tools CO2: Simulate various analog and digital circuits using EDA software tools CO3: Plot various waveforms. CO4: Simulate basic electronic system blocks
ELSEC 352: Paper XI: SEC2: Internet of Things and Applications
After completion of course students will, CO1: Know the basic building blocks of IoT. CO2: Know IoT protocols. CO3: Understand how to Design and Develop IoT based system through case studies.
Semester-VI
EL 361: Paper I: Modern Communication Systems
After completion of study of course students will, CO1: Understand the digital modulation techniques. CO2: Understand different types of pulse modulation techniques. CO3: Describe the evolution and importance of Mobile communication and cellular communication CO4: Know the basics of satellite communication systems.
EL 362: Paper II: Embedded System Design using Microcontrollers
Students will, CO1: Understand features and architecture of PIC microcontroller. CO2: Demonstrate how to interface PIC microcontroller with different pheripherals CO3: Understand features and architecture of ARM microcontroller. CO4: Demonstrate embedded system using given microcontroller
EL 363: Paper III: Industrial Electronics
After study of course students will, CO1: Understand basics of semiconductor power devices. CO2: Analyze basic power electronics circuits and demonstrate applications. CO3: Understand basics of motor control. CO4: Understand basics of Electric Vehicle systems
EL 364: Paper IV: Manufacturing Processes for Electronics
After completion of study of course students will, CO1: Understand basics of Passive Electronic Component Manufacturing Processes CO2: Understand process involved in PCB manufacture and Modern Circuit Assembly CO3: Know about the Semiconductor Device and IC Fabrication Process
EL 365: Paper V: Process Control Systems
Students will, CO1: Familiar with different types of sensors and related systems. CO2: Know different types of measurement systems. CO3: Understand control parameters in process automation. CO4: Understand different types of process control systems and their characteristics
EL 366(B): Paper VI (B): Sensors and Systems

After completion of course students will,
CO1: Understand basic principles and types of different sensors.
CO2: Understand basic principles and types of actuators.
CO3: Know about signal conditioning systems for sensors

EL 367: Paper VII: Practical Course I

After completion of study students will,
CO1: Demonstrate power electronic circuits.
CO2: Demonstrate different types of digital communication systems,
CO3: Understand working principles of different power devices and their characteristics

EL 368: Paper VIII: Practical Course II

Students will able independently to,
CO1: Design embedded systems using PIC microcontroller.
CO2: Design embedded systems using ARM microcontroller.
CO3: Demonstrate PLC SCADA using ladder programming.
CO4: Design and develop sensor systems for different applications

EL 369: Paper IX: Practical Course III(Project)

After completion of practical course students will,
CO1: Understand basic methodology of selection of topic for project.
CO2: Understand how to do literature review for selected topic for project.
CO3: Apply the knowledge for design and development of the selected project.
CO4: Use different software and hardware for testing, validation and verification of circuits for successful outcome of project.
CO5: Understand documentation process in the form of presentation and project Report.
CO6: Understand process of systematic development of electronic system and Development of skills for successful outcome.

ELSEC 361: Paper X SEC1: Design of Printed Circuit Boards

Students will,
CO1: Understand basics of PCB.
CO2: Know about the PCB design technology.
CO3: Know about different soldering techniques

ELSEC 362: Paper XI: SEC2: Mobile Application Development

Students will able to,
CO1: Understand basics of Mobile application development.
CO2: Develop ability to work in android development environment.
CO3: Design and develop mobile applications

Name of Faculty	***Scienceand Technology***
Name of Department	***Botany***
UG Program	***B.Sc Botany***

Program outcomes(POs)

This program will useful for students,

PO1. To understand the plant diversity in the area

PO2. To understand the underlying principles in classification of plants

PO3. To understand the terminology needed in classification
PO4. To understand the differences and similarities in various aspects of classifications
PO5. To classify plant kingdom based on various morphological characteristics
PO6. To understand our role as caretaker and promoter of life
PO7. To understand the origin and advancement of higher plants
PO8. To understand general characters of different families in higher plants
PO9. To classify plants and to make able to identify and describe various plant families
PO10. To understand different behaviours and adaptations in higher and lower plants
PO11. To understand affinities and phylogenetic relationship among advanced and primitive plant families.
PO12**.** To provide thorough knowledge about plant growth, physiological processes etc.

Program Specific Outcomes(PSO)

This program will helpful for students,
PSO1. To foster curiosity in the students for Botany
PSO2. To create awareness amongst students for basic and applied areas in botany
PSO3. To orient students about the importance of abiotic and biotic factors of environment and its conservation.
PSO4. To provide an insight to the aspects in plant biodiversity.
PSO5**.** To inculcate good laboratory practices in students and to provide training in instrument handling and technical support.
PSO6.To understand fundamentals, principles, practical skills and recent developments in the subject area.
PSO7.To inspire and boost interest of the students towards Botany as the main subject and understand global issues.
PSO8.To create foundation for advanced studies, research and development in Botany.
PSO9. To make the students aware about application of botany in various disciplines
PSO10. To highlight the potential of various applied branches of botany to becomeentrepreneurs

Semester -V

Course Outcomes (CO): T.Y.BSc.Botany

BO 351: Cryptogamic Botany (Algae and Fungi)

CO1.Students will learn about lower cryptogams in detail: classification, thallus organization and distribution.
CO2.Students will be able to identify different examples of lower cryptogams by studying their life cycles in detail.
CO3.Students will learn about the economic and ecological importance of lower cryptogams.

BO 352: Archegoniate

CO1.Students will be able to differentiate between different lower and higher cryptogams.
CO2.Students will understand the evolutionary process of lower plant groups.
CO3.Distinct types of the life cycle with type study will be learnt by students.

BO 353: Spermatophyta and Paleobotany
CO1.students will understand systems of classification CO2.Students will gain knowledge about classification, distribution, characters and life cycle of gymnosperms. CO3.Students will gain knowledge about Origin of angiosperms plants and the classification,distribution and lifecycle. CO4.Students will learn about characters and economic importance of families; thus, they will be able to identify plants on the field and also learn techniques of preservation. CO5.The formation process and several types of students will understand fossils.
BO 354: Plant Ecology
CO1.Students will acquaint with well-versed in the interrelationships between the living world and the environment, homeostasis and plant indicators. CO2.Students will understand concepts of population and community ecology . CO3.Students will be able to understand better the biogeochemical cycles, their types and significance in an ecosystem. CO4.Students will be familarize with a new concept: EIA, environmental audit and significance of each in sustainable development.
BO 355: Cell and Molecular Biology
CO1.Students will get an insight into structure and functions of basic units of life i.e., cells and various organelles. CO2.Students will learn about genetic material DNA its structure, function and the process of replication. CO3.Students understanding of gene expression and regulation will be enhanced.
BO 356: Genetics
CO1.Students will correctly understand different laws of Genetics along with the transfer of characters from parents to offspring, the interaction of genes and structure of chromosomes. CO2.Students will learn about Mendelism and neo mendelisum CO3Students will be introduced to concepts such as mutations and sex-linked inheritance. CO4.Students will be introduced to concepts gene mapping, chromosome aberration (numerical and structural)
BO 357: Practical based on BO351 and BO352
CO1.Students will be able to identify cryptogams and classify them based on morphology and reproductive structures. CO2.Techniques in anatomy will be enhanced in students. CO3.Evolutionary trends related to stellar evolution in pteridophytes will be understood better.
BO 358: Practical based on BO353 and BO354
CO1.Students will be able to describe diagnostic features of phanerogams and classify plants based on family characters. CO2.Identification of fossils, ecological studies using remote sensing will become easier for students.

CO3.Students will be able to apply data to study ecosystem types.

BO 359: Practical based on BO355 and BO356

CO1.Students will be able to identify and observe the structural changes in a cell during cell divisions: mitosis and meiosis and colchicine treatment.

CO2.Students will gain expertise in techniques of DNA and RNA isolation and estimation.

CO3.Study of chromosomes, tetraploidy, structural students will better understand heterozygotes.

CO4.Students will be able to apply and solve problems on genetics related to PTC sensitivity, multiple alleles, three-point test cross, etc.

BO 3510: Medicinal Botany

CO1.Skill enhancement courses will introduce students to different indigenous systems of medicine.

CO2.Students will learn new skills to conserve and propagate medicinal plants used in traditional medicine.

CO3.Students will get an insight into ethnobotany and folk medicine.

BO 3511: Plant Diversity and Human Health

CO1.Students get a chance to learn the concept of plant diversity and agro diversity.

CO2.Students become aware of factors leading to loss of agrobiodiversity, and projected scenario for biodiversity loss.

CO3.Students will familarize with detailed information on the Conservation of Biodiversity, social approaches to conservation

CO4. students will understand biodiversity awareness programmes and sustainable development to get a better understanding of the role of plants in human life.

BO 361: Plant Physiology and Metabolism

CO1.Different mineral elements utilized by plants for their growth and the amount in which they are utilized will be understood by students.

CO2.Students will learn about different metabolic cycles used by plants in different conditions and their significance.

CO3.Students will learn about the process of translocation of food within the plant body.

CO4.Types of plant growth regulators, their role and the concept of photomorphogenesis will be understood by students.

BO 362: Biochemistry - 2

CO1.Students will learn about the structure, function and commercial significance of different biomolecules.

CO2.Students will learn about the mechanism of the action of enzymes.

CO3.Students will be able to correctly identify the different metabolic pathways of various biomolecules.

BO 363: Plant Pathology

CO1.Students will learn different terminologies used in the study of plant diseases.

CO2.Students will understand about defence the mechanism in plants and methods of studying

plant diseases.
CO3.Students will develop an understanding of the importance of pathological studies about crop plant diseases.
CO4.Students will learn about the processes of controlling various plant diseases.

BO 364: Evolution and Population genetics

CO1.Students will understand the origin of Population genetics- earth and life on earth.
CO2.Students will learn different theories of evolution.
CO3.Students will get an insight into geological time scale and fossils.
CO4.Students will learn about genetic frequency and genetic polymorphism within a population and species isolation.

BO 365: Advanced Plant Biotechnology

CO1.Students will understand the concept of tissue culture in detail from the time of its discovery and landmarks.
CO2.Students will get to know about different techniques in genetic engineering used to prepare genetically modified plants, thus enhancing crop production.
CO3.Students will understand the role of microorganisms in the synthesis of different commercial products.
CO4.Students will learn about the application of nanotechnology in agriculture.

BO 366: Plant Breeding and Seed Technology

CO1.Students will be introduced to a field of agriculture called plant breeding, the concept, its history and its scope.
CO2.Students will learn traditional and advanced methods of plant breeding to enhance crop production.
CO3.The set-up of a seed industry - it's working; seed production - its stages will be understood by students to develop employability skills in them.

BO 367: Practical based on BO361 and BO362

CO1.Students will be able to practically observe plasmolysis, determine stomatal frequency and stomatal index of leaves and their importance to plant physiology.
CO2.Students will complete study of Physiological processes, enzymology, estimation of proteins, vitamins, and other biomolecules, spectrophotometry applied by students in research.
CO3.Students will be able to use chromatography techniques for various isolations and estimations.

BO 368: Practical based on BO363 and BO364

CO1.Students will learn laboratory techniques such as preparation of media, sterilization techniques and inoculation.
CO2.Students will be able to identify plant diseases, causal organisms, method of infection and control of diseases.
CO3.Students acquaint with fossil identification through specimen study and a visit to the museum will be clearly understood by students.
CO3.Students will be able to solve problems based on allele and gene frequency; study

sympatric and allopatric speciation.

BO 369: Practical based on BO365 and BO366

CO1.Students will gain expertise in handling equipment used in genetic engineering like gene gun, PCR, gel doc, microcentrifuge, electrophoresis, micropipettes, incubator, shaker, etc.; preparation of media and other techniques in plant tissue culture

CO2.Students will be able to understand genetic engineering and mutagenesis - their applications in agriculture, e.g. transgenic plants.

CO3.Students will be able to evaluate plant breeding methods for the betterment of mankind and crop improvement, interpret the application of conventional and non-conventional methods of plant breeding and learn methods of seed testing.

BO 3610: Nursery and Gardening Management- 2

CO1.Skill enhancement in nursery and gardening management will be inculcated in students.

CO2.Propagation of plants and gardening operations will be learnt and understood by students in detail

BO 3611: Biofertilizers

CO1.Students will get an opportunity to learn about biofertilizers, their types and importance in agriculture.

CO2.Students will be able to learn the methods of cultivation of various biofertilizers, including manures, thus enhancing their skills.

Name of Faculty	***Scienceand Technology***
Name of Department	***Mathematics***
UG Programme	***B.Sc Mathematics***
Program outcomes	

Program will be useful to,

PO1.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.

PO2• Reflect the broad nature of the subject and developing mathematical tools for continuing further study in various fields of science.

PO3• 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 .

PO4• Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

Program Specific Outcomes

PSO1. Students will be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology and recognize basic geometrical figures and graphical displays ,state important facts resulting from their studies.

PSO2• Students will study a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.

PSO3• Students will aware about exposure to global and local concerns that explore them many aspects of Mathematical Sciences.
PSO4• Students will be able to apply their skills and knowledge, that is, translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.
PSO5. Students will familiarize with history of mathematics and hence of its past, present and future role as part of our culture.

Course Outcomes

S.Y.B.Sc.Mathematics

Semester-III

MT-231: Calculus of Several Variables

CO1:Students will acquaint with Limits and Continuity and functions of Several Variables, Domain and Range, Functions of Three or More Variables .
CO2:Students will complete study of extreme values of functions of two variables,Second Derivative Test, Lagrange Multipliers.
CO3. Students will study about Multiple Integrals ,Fubini's Theorem, Double integral over general regions, Change of order of integration for two variables,Triple integrals in spherical coordinates,Jacobians , Change of variables in multiple integrals.
CO4. Students will familiarize with Partial Derivatives and Differentiability ,Higher Derivatives, Clairaut's Theorem , Partial Differential Equations, Wave equation, Euler's theorem.

MT-232(A): Numerical Methods and It's Applications

CO1: Students will acquaint with Solution of Algebraic and Transcendental Equations.
CO 2: Students will complete study of Interpolatio,Newton- Raphson method
Finite Difference Operators and their relations,Newton's Interpolation Formulae,Lagrange's Interpolation Formula.
CO 3: Students will familiarize with Numerical Differentiation and Integration, Trapezoidal rule,
Simpsons's 1/3rd rule, Simpsons's 3/8th rule.
CO 4: Students will learn about Numerical solution of first order ordinary differential equations, Taylor's Series method ,Picard's method of successive approximations, Euler's method, Runge - Kutta Methods.

MT 233: Mathematics Practical

CO1.Students will able to solve problems on limits and Continiuty
CO2.Students will complete study of numerical differentiation and integrals
CO3.Students will solve first ordinary differential equations.
CO4. Students will familiarize with partial derivatives and differentiality.

Semester-IV

MT-241: Linear Algebra

CO1.Students will familiarize with Matrices and System of Linear Equations ,Consistency of

homogeneous and non-homogeneous system of linear equations using rank, condition for consistency, Solution of System of Equations: Gauss elimination and Gauss-Jordan elimination method, examples

CO2.Students will acquaint with Vector Spaces-I , Subspaces, Linear Dependence and Independence ,Basis of Vector Space

CO3.Students will complete study of Vector Spaces-II , Row, Column and Null Space of a matrix , Rank and nullity.

CO4.Students will study about Linear Transformations , Kernel and range of a linear Transformation , Rank-Nullity theorem, Composite and Inverse Transformation, Basic Matrix Transformations in R2 and R3 , Linear Isomorphism.

MT 242(A): Vector Calculus

CO1.Students will study methods of Vector-Valued Functions like Curves in Space, Limits and Continuity, Derivatives and Motion, Differentiation rules for Vector Function, Vector Functions of Constant Length Unit Tangent Vector, Circle of Curvature for Plane Curves, Curvature and

Normal Vectors for a Space Curve.

CO2. Students will complete study of Line Integral of Scalar Functions, Additivity, Line integral in the Plane, Line Integral of Vector Fields, Line Integrals with respect to dx, dy, dz . Divergence, Two forms for Green's Theorem, Green's Theorem in the Plane.

CO3.Students will familiarize with Surface Integrals like Parameterizations of Surfaces, Implicit surfaces. Orientation of Surfaces, Surface Integrals of Vector Fields.

CO4.Students will learn to use of applications of Integrals like,The Curl Vector Field, Stokes' Theorem(without proof), Conservative Fields and Stokes' Theorem, Divergence Theorem, Unifying the Integral Theorems

MT 243: Mathematics Practical

CO1.Students will solve problems on matrices and linear equations.

CO2.Students will learn to study problems on linear transformation and vector spaces.

CO3.Students will familiarize with problems on integrals and vector valued functions.

Name of Faculty	***Scienceand Technology***
Name of Department	***Zoology***
UG Programme	***B.Sc Zoology***
Program Outcomes :S.Y. B.Sc Zoology	

PO1.Students will acquaint with the origin and advancement of higher vertebrates (tetrapoda).

PO2. Students will understand general characters of different groups of higher vertebrates.

PO3. Students will classify vertebrates and to become able to understand the possible group of vertebrates observed in nature.

PO4. Students will understand different behaviours and adaptations in higher vertebrates

PO5. Students will understand affinities among different groups of higher vertebrates

PO6. The learner will familiarize with biology, varieties of silkworms and the basic techniques of silk production.

PO7.The learner Will understand the basics about beekeeping tools, equipment, and managing beehives.

PO8. The learner will become aware of types of agricultural pests, Major insect pests of agricultural importance and Pest control practices

PO9. The learner will understand the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques..

PO10.Students will acquaint with handling of lab instruments.

PO11.Students will familiarize with biotic and abiotic factors and environmental conservation.

Program Specific Outcomes (PSOs):

PSO1. The students will be able to understand, classify and identify the diversity of higher vertebrates.

PSO2. The students will able to understand the complexity of higher vertebrates.

PSO3. The students will be able to understand different life functions of higher vertebrates.

PSO4. The students will be able to understand the linkage among different groups of higher vertebrates.

PSO5. The student will become aware regarding his role and responsibility towards nature as a protector, to understand his role as a trustee and conservator of life which he has achieved by learning, observing and understanding life.

PSO6. The learner will understand the biology, varieties of silkworms and the basic techniques of silk production

PSO7. The learner will understand the types of agricultural pests, Major insect pests of agricultural importance and Pest control practices.

PSO8.Learner will understand the basics about beekeeping tools, equipment, and managing beehives.

PSO9. The learner will understand the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques.

Semester-III

Course Title: Animal Diversity - III
Course Code: ZO – 231

CO1. Students will complete study of chordate characterss

CO2.Students will understand about comparison between non-chordates and Chordates

CO3.Students will collect information about hemichordates,urochordates and cephalochordates.

CO4.Students will study about agnatha and gnathostomata.

CO5.Students will get information about classification of Pisces and amphibia with examples.

CO6. Students will receive complete information of digestive,reproductive and nervous system of Scoliodon.

Course Title - Applied Zoology I
Course Code - ZO - 232

CO1.Students will collect information of different silkmoths and their rearing methods.

CO2.Students will introduced with different rearing appliances.

CO3 Students will complete study of agricultural pests like Red cotton bug,mango stem borer, Jawar Stem borer and their control measures .
CO4 Students will became aware of damage due to pests and their control measures.
CO5. Students will study different non-insect pests and control measures.
CO6.Students will familiarize with different pest control appliances.

Course Title: Zoology Practical Paper
Course Code: ZO – 233

This course will helpful to students,
CO1.To acquaint with protochordates,pisces,amphibians etc.
CO2. To familiarize with scale types and types of tailfins in fishes.
CO3.To understand use of different sericulture equipments.
CO4. To understand the biology, varieties of silkworms and the basic techniques of silk production and harvesting of cocoons.
CO5. To learn the different silkworm species and their host plants.
CO6. To study types of agricultural pests and Major insect pests of agricultural importance.
CO7.To study blister beetle,pulse beetle,rice weevil with respect to nature of damage,economic importance,and control measures.
CO8. To study Pest control practices .
CO9.To acquaint with different noninsect pests and their control methods.

Course Title: Animal Diversity - IV
Course Code: ZO – 241

Co1. Students will study about classification of reptilia,aves,mammals
CO2.Students will receive information about poisonous and non-poisonous snakes
CO3. Students will understand types of migrations and flight adaptations in birds.
CO4.Students will study beak and feet modifications of birds
CO5. Students will introduced with egg laying, aquatic, flying mammals.
CO6.Students will complete study of digestive, nervous, respiratory, reproductive systems of rat.

Course Title - Applied Zoology II
Course Code - ZO-242

CO1 .Students will understand difference between caste system of bees.
CO2. Students will learn rearing and removal of honey and wax from hive.
CO3. Students will familiarize with different beekeeping appliances.
CO4. Students will became aware of economic importance of fishes and harvesting methods
CO5. Different gears and crafts will introduced to students.

Course Title: Zoology Practical Paper (Course Code: ZO – 243)

CO1. Students will complete practicals related to classification of reptilia, aves, mammals.
CO2.Students will able to identify poisonous and nonpoisonous snakes.
CO3.Students will collect information of beaks and feets in birds.
CO4. Students complete study of all systems in rat body.

CO5. Students study honey bees, identifies their types and also collects information of bee-rearing appliances.
CO6.To understand the basic life cycle of the honeybees, beekeeping tools and equipments.
CO7. To learn managing beehives for honey production and pollination.
CO8.Students will acquaint about rearing of fishes and collection of fishes by using different Boats and nets
CO9. To understand the basic information about fishery, culturing and harvesting methods of fishes.
CO10. To understand fish preservation techniques