Department of English

PO, PSO, CO:

Programme Outcomes (PO):

- **PO1: Basic knowledge:** apply and analyze the knowledge of languages and social sciences.
- **PO2: Problem Analysis:** Identify, study of literature, understand terms and particular concepts. Identify, formulate and analyze complex ideas in the social sciences.
- **PO3:** Understand, identify and analyzed the knowledge such as, code of conduct of society, manners, cultural issues, political issues, economical, historical and geographical etc.
- **PO4: Critical Thinking:** Identify the assumptions, checking out the degree to which assumptions are accurate and valid looking out the correct perspectives.
- **PO5: Effective communication:** Apply the basic knowledge to listen, speak, read and write clearly to understand English knowledge.
- **PO6: Modern tool usage:** To understand and analyzed the knowledge of ICT in communications.
- **PO7: Ethics and values:** Apply the ethical principles and understand the responsibilities of the societies.
- **PO8: Communications:** To communicate effectively in the society such as being able to comprehend and write effective reports and design documents for making effective presentation and exchange clear information.

Programme Specific Outcomes (PSO) - English

A degree in English provides with the wide range of transferrable skills which is important.

- **PSO1:** Ability for clear expression for both oral and written.
- **PSO2:** Attend the potential knowledge of English language, their trends and terms.
- **PSO3:** Understand the code of conduct cultural issues.
- **PSO4:** Understand the various literary genres and study of literature such as Indian, British literature and language etc.

Course Outcomes (CO)

Class: F.Y.B.Com. (Compulsory English)

Sr. No.	**Objectives**
1.	To offer students good pieces of prose and poetry, so that they realize the beauty and communicative power of English.
2.	To expose them the native cultural experiences and situations so that they understand the importance and utility of the English language.
3.	To develop overall linguistic competence and communicative skills among the students
4.	To develop oral and written communicative skills among the students so that their employability enhances and English becomes the medium of their livelihood and personality.

Sr. No.	**Course Outcomes**
1.	Students realize the beauty and communicative power of English.
2.	Students understand the importance and utility of the English language.
3.	Students can use the language effectively and feel confident in and outside the world
4.	Their employability enhances and English becomes the medium of their livelihood and personality.

Class: F.Y. B. A. (Optional English)- English Literature and Language

Sr. No.	**Objectives**
1.	To expose the students to the basics of literature and language.
2.	To familiarize them with different types literature in English, the literary devices and terms of language.
3	To introduce the units of language so that they become aware of the technical aspects and their practical usage.
4.	To prepare students to go for detailed study and understanding of literature and language.
5.	To develop integrated view about language and literature in them.

Sr. No.	**Course Outcomes**
1.	Students realize various forms of literature and language.
2.	They understand the literary merit, beauty and creative use of language.
3.	Students become aware of the technical aspects and their practical usage
4.	Students develop the art of reading and understanding of literature and language.

Class: F.Y. B. A. (Compulsory English)

Sr. No.	**Objectives**
1.	To familiarize students with excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English.

2.	To expose them the native cultural experiences and situations in order to develop human values and social awareness.
3.	To develop overall linguistic competence and communicative skills of the students

Sr. No.	**Course Outcomes**
1.	Students realize the beauty and communicative power of English.
2.	Students develop human values and social awareness.
3.	Student-employability enhances and English becomes the medium of their livelihood and personality

Class: F.Y. B. A. (Functional English Paper-1) - An Introduction to English Language and

Sr. No.	**Objectives**
1.	To introduce major features of spoken English
2.	To create awareness about using language according to the situation
3.	To help learners overcome common problems of Indian speakers of English
4.	To reinforce the grammar studied up to std. XII
5.	To help learners acquire the basic skills of effective writing.

Sr. No.	**Course Outcomes**
1.	Students realize major features of spoken language and its importance in real life situation.
2.	They understand the minute technical aspects which are necessary to make language use appropriate according to various real life situations.
3.	They realize the errors of second language learners and try to overcome them.
4.	Students revise the background knowledge and concepts in grammar studied up to std. XII which functions as a frame for grammatically and meaningfully correct use of language.
5.	Students get exposure to make effective use of language in both oral and written forms.

Class: T.Y. B. A. (Compulsory English)

Sr. No.	**Objectives**
1.	To develop communicative skills of the students and thereby develop their proficiency in English language.
2.	To develop competence among the students for self learning.
3.	To encourage and enable the students to read the various types of texts on their own and discuss them among peers.

Sr. No.	**Course Outcomes**
1.	Students acquire the proficiency in English language

2.	The wider exposure of the English language enables them to acquire various skills in effective communication and it enhances their abilities of self learning.
3.	The students acquire the skill of reading different types of texts in English.

Class: T.Y. B. A. Paper-III (General English)

Sr. No.	**Objectives**
1.	To acquaint students with different modes of communication in the context of modern life.
2.	To make them effective and efficient users of English language.
3.	To impress upon their minds the importance and value of communication in personality development and career prospects.
4.	To enhance their employment opportunities in communication based careers.

Sr. No.	**Course Outcomes**
1.	Students acquire communication skills in English language to cope up with modern life.
2.	The wider exposure of the English language enables them to acquire various skills in effective communication and it enhances their abilities of self learning.
3.	The students acquire the skill of reading different types of texts in English.

Class: T.Y. B. A. (English Special paper- 3) - Appreciating Novel

Sr. No.	**Objectives**
1.	To introduce students to the basics of novel as a literary form
2.	To expose students to the historical development and nature of novel
3.	To encourage and enable the students to read the various types of texts on their own and discuss them among peers.
4.	To develop literary sensibility and sense of cultural diversity in students

Sr. No.	**Course Outcomes**
1.	Students acquire the proficiency in English language
2.	The wider exposure of the English language enables them to acquire various skills in effective communication and it enhances their abilities of self learning.
3.	The students acquire the skill of reading different types of texts in English.

Class: T.Y. B. A. (English Special Paper- 4) –Introduction to Literary Criticism

Sr. No.	**Objectives**
1.	To develop communicative skills of the students and thereby develop their proficiency in English language.
2.	To develop competence among the students for self learning.

3.	To encourage and enable the students to read the various types of texts on their own and discuss them among peers.

Sr. No.	**Course Outcomes**
1.	Students acquire the proficiency in English language
2.	The wider exposure of the English language enables them to acquire various skills in effective communication and it enhances their abilities of self learning.
3.	The students acquire the skill of reading different types of texts in English.

P. G. Programme Outcomes (PO):

- **PO1: Basic knowledge:** apply and analyze the knowledge of languages and social sciences.
- **PO2: Problem Analysis:** Identify, study of literature, understand terms and particular concepts. Identify, formulate and analyze complex ideas in the social sciences.
- **PO3:** Understand, identify and analyzed the knowledge such as, code of conduct of society, manners, cultural issues, political issues, economical, historical and geographical etc.
- **PO4: Critical Thinking:** Identify the assumptions, checking out the degree to which assumptions are accurate and valid looking out the correct perspectives.
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- **PO7: Ethics and values:** Apply the ethical principles and understand the responsibilities of the societies.
- **PO8: Communications:** To communicate effectively in the society such as being able to comprehend and write effective reports and design documents for making effective presentation and exchange clear information.

Programme Specific Outcomes (PSO) - English

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- **PSO1:** Ability for clear expression for both oral and written.
- **PSO2:** Attend the potential knowledge of English language, their trends and terms.
- **PSO3:** Understand the code of conduct cultural issues.

- **PSO4:** Understand the various literary genres and study of literature such as Indian, British literature and language etc.

M.A.I (English)

Paper- 1.1 and Paper 2.1- English literature from 1550-1798

Sr. No.	**Objectives**
1	To introduce students to major movements and figures of English Literature through the study of selected literary texts.
2	To create literary sensibility and emotional response to the literary texts and implant sense of appreciation of literary texts.
3	To expose students to the artistic and innovative use of language employed by the writers.
4	To instill values and develop human concern in students through exposure to literary texts.
5	To enhance literary and linguistic competence of students.

Sr. No.	**Course Outcomes**
1	Students learn about major movements and literary figures in English Literature.
2	Students develop emotional response and sense of interpretation to the literature.
3	Students get exposure to artistic use and techniques used by the authors.
4	Students inculcate moral and human values thorugh the study of literary text.

Paper- 1.2 and Paper 2.2- English literature from 1798-2000

Sr. No.	**Objectives**
1	To introduce students to major movements and figures of English Literature through study of selected literary texts
2	To create literary sensibility for appreciation in students and expose them to artistic and innovative use of language by writers and to various worldviews
3	To instill values and develop human concern in students through exposure to literary texts
4	To enhance literary and linguistic competence of students

Sr. No.	**Course Outcomes**
1	The Students become familiar with major movements through selected literary text.
2	The Students become familiar with the use of language in various writers
3	The Students develop human values through selected literary text.

4	The students develop their literary and linguistics competence.

Paper- 1.3 and Paper 2.3 -Contemporary studies in English language

Sr. No.	**Objectives**
1	To introduce students to the basic tools essential for systematic study of Language.
2	To acquaint students with the basic concepts and issues in linguistics.
3	To introduce them to various sub-disciplines of linguistics.
4	To initiate them into theoretical perspectives and enable them to apply the Acquired linguistic skills in real life situations.
5	

Sr. No.	**Course Outcomes**
1	Students become acquainted with the basic linguistic tools.
2	They learn basic concepts and issues in Linguistics.
3	Students adopt various sub-disciplines and various trends in linguistics.
4	They use theoretical knowledge of language and imply it in real life situations.

Paper 1.4 and Paper 2.4- Literary Criticism and Theory

Sr. No.	**Objectives**
1	To introduce students to the nature, function and relevance of literary criticism and theory.
2	To introduce them to various important critical approaches and their tenets.
3	To encourage them to deal with highly intellectual and radical content and thereby develop their logical thinking and analytical ability.
4	To develop sensibility and competence in them for practical application of critical approach to literary texts.

Sr. No.	**Course Outcomes**
1	Students learn historical development of criticism with its basics.
2	Students develop critical approach towards literature.
3	Students get deep understanding of various critical approaches and their principles.
4	Logical thinking and analytical ability of students is enhanced through the study of prescribed critical essays and articles.

M.A.II (English)

Paper 3.1 and Paper 4.1- Indian Writing in English

Sr. No.	**Objectives**
1	To introduce students to major movements and figures of Indian Literature in English through the study of selected literary texts
2	To create literary sensibility and emotional response to the literary texts and implant sense of appreciation of literary text
3	To expose students to the artistic and innovative use of language employed by the writers
4	To instill values and develop human concern in students through exposure to literary texts

Sr. No.	**Course Outcomes**
1	Students learn how Indian English Poetry expresses the ethos and culture of India.
2	Students acquire literary sensibility for appreciation of literary text.
3	Students learn the major movements and figures in Indian English Literature
4	Students are aware of human values and concerns reflected in literary texts

Paper 3.2 and Paper 4.2- English Language and Literature Teaching

Sr. No.	**Objectives**
1	To acquaint the students with different theoretical and practical aspects of language and literature teaching.
2	To acquaint them with different approaches, methods and techniques of teaching English language and literature.
3	To enable students to use theoretical approaches in real teaching of English language and literature.

Sr. No.	**Course Outcomes**
1	The students acquaint with different theoretical and practical aspects of language and literature teaching.
2	They acquaint different approaches, methods and techniques of teaching English language and literature.
3	Students become mentally and intellectually prepared for the real life teaching.

Paper- 3.4 and Paper 4.4- Drama in English

Sr. No.	**Objectives**
1	To introduce students to major movements related to drama, works and dramatists through study of selected texts
2	To create literary sensibility for appreciation in students and expose them to artistic and innovative use of language by writers and to various worldviews
3	To instill values and develop human concern in students through exposure to literary texts
4	To enhance literary and linguistic competence of students

Sr. No.	**Course Outcomes**
1	The Students become familiar with major movements through selected dramatic works
2	The Students become familiar with the use of language in various writers and it enhances their abilities of self-learning.
3	The Students develop human values through selected literary text.
4	The students develop their literary and linguistics competence in communications skills.

Paper 3.9 and Paper 4.9- Research Methodology

Sr. No.	**Objectives**
1	To introduce the students to the concept of research
2	To enable them to understand the stages of research
3	To familiarize the learners to the procedures involved in research
4	To sensitize them to the requirements of cohesion and coherence in continuous composition
5	To highlight the significance of systematic planning and execution of research activity

DEPARTMENT OF HISTORY

PO PSO &CO:

Programme Outcomes of BA (PO):

PO1: Be acquainting with the range of issues related Indian History and its distinctive eras.

PO2: Understand the history of the country's other than India with comparative approach.

PO3: Think and argue historically and critically in writing and discussion

PO4: Prepare for various types of competitive examination

PO5: Critically organize the social, political, economic and culture aspects of History.

PO6: To study further in the applied field of History as archeology.

Program specific outcomes (PSO) History

PSO1: Students will distinguish between primary and secondary sources and identify and evaluate evidence

PSO2: Student analyzes primary and secondary sources understands interpretive differences

PSO3: Student will demonstrate in discussion and written work their understanding of different peoples and cultures in past environments and of how those cultures changed over the course of the centuries.

PSO4: Developing your research, writing and problem solving skills

PSO5: Undergraduate degree career options and employers include:

- Archivist
- Arts and humanities council
- Civil service
- Consulting
- Foreign service

- History educator at a nonprofit agency
- Historic site manager
- Information manager
- Museum guide or expert
- Politics
- Public history
- Researcher
- Technical writing
-

Course Outcomes (CO):

F.Y.B.A. (Chh. Shivaji and His Times 1630 – 1707)

Objectives -

1) To introduce innovative study techniques in the study of Maratha to make it value based, conceptual and thought provocative.

2) To introduce International elements in the study of Marathas to facilitate comparative analysis of this history.

3) To understand the Socio – economic, cultural and political background of 17^{th} century Maharashtra.

4) To encourage students to for competitive examinations.

5) To promote interest in the discipline of History.

6) Suggesting the Importance of References.

Outcomes:

1. Understand the inspiration behind the establishment of swarajya.

2. Explain the reasons behind Chatrapati Shivaji's early conflicts with the regional

lords and the outsiders.

3. Know about the administrative need and the importance of grand coronation of

Chatrapati Shivaji.

4. Asses the Chhatrpati Shivaji's invasion on Karnataka.

5. Understand the formation of welfare state during the Maratha rule
6. Understand the industrial and agricultural aspects of Chhatrpati Shivaji's regime
7. Understand the administrative aspect of the Swarajya.

S.Y.B.A. – G2 (Modern India 1857 – 1950)

Objectives –

1) The course is designed to help the students to know – History of freedom

movement of India, aims, objectives problems and progress of Independent India.

2) It aims at enabling the student of understand the processes of rise of modern

India.

3) The course attempts to acquaint student with fundamental aspects of Modern

Indian History.

Outcomes

1 - Discuss the advent of Europeans and their administration
2 - Evaluate the Anglo-Mysore wars and Anglo-Sikh wars.
3 - Realize the Permanent Revenue system and Lord Ripon's Local Self Government.
4 - Understand about the Socio-religious reform movements in 19th century.
5 - State the role of moderates and extremists in the freedom movement.

S.Y.B.A. – S1 (Ancient India 3000 B.C. to 1206 A.D.)

Objectives -

1) To survey the sources of History of Ancient India.

2) The course intends to provide an understanding of social, economic, religious

and institutional bases of Ancient India.

3) The course will study such as agriculture, Industry, trade.

4) To study the development of the concept of Nation – State background of

political history.

5) To study ancient Indian Art & Architecture.

Outcomes –

1- Understand the salient features of Indus valley civilization
2- Evaluate the features of Buddhism and Jainism
3- Visualize the administration of Mauryas and the art and architecture of Mauryas
4- Identify the administration of Guptas and their contribution to Nalanda

University

S.Y.B.A. – S2 (Medieval India 1206 – 1707)

Objectives -

1) To survey the sources of History of medieval India.

2) The course intends to provide an understanding of social, economic, religious

bases of medieval India.

3) To Study medieval Indian art & architecture.

Outcomes:

1 Understand the foundation of the Delhi sultanate and the Sultanate

administration.

2 - Recognise the Socio, economic and religious conditions under Vijayanagar

Empire.

3 - Identify the condition of India under the Mughal Empire.
4 - Explain the Administration and art and architecture of Mughals.
5 - Analyse the rise of the Marathas and the contribution of Shivaji.

T.Y.B.A. – G3 - History of the world in 20th century(1914 – 1992)

Objectives -

1) To help the student to know Modern World. To acquaint the student with the socio-economic, Political developments in other countries. And understand the cotemporary world in the light of its background History.

2) To orient the students with political history of Modern World.

3) Impart knowledge about world concepts.

4) To enable students to understand the economic transition in World during the 20th century.

5) To highlight the rise and growth of nationalism as a movement in different parts of the world.

Outcomes

1) Explain main concepts related to Modern World History.
2) Explain the main points of historical development related to Modern World History.
3)Explain the effects of developments in Modern World History on Ottoman Empire/Turkish Republic.
4)Explain the effects of the developments in European and World History on today's world.

T.Y.B.A. – S3 Introduction to History.

Objectives -

1) To orient about how history is studied, written & understood.

2) To explain methods and tools of data collection.

3) To study the various views of Historiography.

4) To describe importance of inter-disciplinary research.

5) To introduce students to the basics of research.

Outcomes

1)Students should understand academic honesty, a concept presented to them in all history classes.

2) Students should understand the basic skills that historians use in

Research.

3) Students should understand the basic skills that historians use in writing.

4) Students should understand the basic tools of historical analysis.

5 - Students should understand the value of diversity.

T.Y.B.A. – S4 (History of Asia in 20th Century (1914 – 1992)

Objectives -

1) To orient the students with political history of Asia.

2) To enable students to understand the economic transition in Asia during the 20th centuries.

3) To provide students with an overall view and broad perspective different movements connected with Nationalist aspirations in the region of Asia in general.

4) To empower students to cope with challenges of globalization.

Outcomes

1) Examine historical sources critically and analytically (reading history). These sources include not only survey texts and scholarly articles, but also short monographs and extended primary sources.
2) Create and communicate personal interpretations of historical problems (writing history). Forms for communication of personal interpretations include medium-length essays (from 1500-3000 words), comparative book reviews, short interpretive essays, primary source studies, and final examinations.
3) Independently analyze the ideas of other students and the instructor in class in both tutorials and seminars (discussing history).

Department : Marathi
Learning Outcomes

Program Outcomes (PO):

- **PO1: Basic knowledge:** apply and analyze the knowledge of languages and social sciences.
- **PO2: Problem Analysis:** Identify, study of literature, understand terms and particular concepts. Identify, formulate and analyze complex ideas in the social sciences.
- **PO3:** Understand, identify and analyzed the knowledge such as, code of conduct of society, manners, cultural issues, political issues, economical, historical and geographical etc.
- **PO4: Critical Thinking:** Identify the assumptions, checking out the degree to which assumptions are accurate and valid looking out the correct perspectives.
- **PO5: Effective communication:** Apply the basic knowledge to listen, speak, read and write clearly to understand Marathi knowledge.
- **PO6: Modern tool usage:** To understand and analyzed the knowledge of ICT in communications.
- **PO7: Ethics and values:** Apply the ethical principles and understand the responsibilities of the societies.
- **PO8: Communications:** To communicate effectively in the society such as being able to comprehend and write effective reports and design documents for making effective presentation and exchange clear information.
- **PO9: Develop Competency :** Develop Competency in Literary Forms. (i.e. Marathi Poetry, Novel, Autobiography, Short Story, Drama & Performing Prose)

Program specific outcomes (PSO) Marathi

A degree in Marathi provides with the wide range of transferrable skills which is important

- **PSO1:** Ability for clear expression for both oral and written.
- **PSO2:** Attend the potential knowledge of Marathi language, their trends and terms.
- **PSO3:** Understand the code of conduct cultural issues.
- **PSO4:** Understand the era trends and study of literature such as Indian literature (Gramin, Dalit, strivadi folk-literature etc.)
- **PSO5 :** Get Information about the history of Modern Marathi Literature.

- **PSO6 :** study News Writing for Media.

Course Outcomes (CO) : Marathi :

BA Programme		
Class	**Course Name**	**Course Objectives & Outcome**
FYBA	मराठी साहित्य : कथा आणि एकांकिका किंवा व्यवहारिक व उपयोजित मराठी भाग १/२ (G1-k/v)	**Objectives :** १. मराठी साहित्यासंबंधी रुची निर्माण करणे. २. विद्यार्थ्यांच्या वाङ्मयीन अभिरुचीचा विकास करणे ३. कथा आणि एकांकिका साहित्य प्रकार समजून घेणे. ४. भाषिक व लेखन कौशल्य विकसित करणे. ५. मराठीचा कार्यालयीन / व्यवसायिक कामकाजात वापर, गरज व स्वरूप विशेषांची माहिती करून देणे. **Outcome :** १. मराठी साहित्यासंबंधी रुची निर्माण झाली. २. भाषिक क्षमता विकसित झाली. ३. भाषिक व लेखन कौशल्य विकस झाला.
FYBCOM	भाषा, साहित्य आणि कौशल्यविकास (G1)	**Objectives :** १. मराठी साहित्यासंबंधी रुची निर्माण करणे. २. विविध क्षेत्रातील कर्तृत्ववान व्यक्तींच्या कार्याची व विचारांची ओळख करून देणे. ३. भाषिक क्षमता विकसित करणे. ४. भाषिक व लेखन कौशल्य विकसित करणे. ५. मराठीचा कार्यालयीन / व्यवसायिक कामकाजात वापर, गरज व स्वरूप विशेषांची माहिती करून देणे. **Outcome :** १. मराठी साहित्यासंबंधी रुची निर्माण झाली. २. भाषिक क्षमता विकसित झाली. ३. भाषिक व लेखन कौशल्य विकस झाला. ४. विद्यार्थ्यांच्या वाङ्मयीन अभिरुचीचा विकास झाला.
SYBA	आधुनिक मराठी साहित्य आणि	**Objectives :** १. चरित्र-आत्मचरित्र या साहित्य प्रकारांच्या तात्विक घटकांचे ज्ञान करून देणे.

	उपयोजित मराठी (G2-k/v)	२. भाषिक कौशल्याची क्षमता विकसित करणे. ३. कार्यालयीन भाषा व्यवहारातील लेखन कौशल्याची ओळख करून देणे. ४. आधुनिक मराठी साहित्यातील निवडक चरित्र-आत्मचरित्र यांचे आकलन व आस्वाद क्षमता विकसित करणे. ५. पारिभाषिक संज्ञाची ओळख करून देणे. **Outcome :** १. चरित्र-आत्मचरित्र या साहित्य प्रकारांच्या तात्विक घटकांचे ज्ञान झाले. २. आधुनिक मराठी साहित्यातील निवडक चरित्र-आत्मचरित्र यांचे आकलन व आस्वाद क्षमता विकसित करण्यात आली. ३. पारिभाषिक संज्ञाची ओळख करून दिली.
	मराठी साहित्यतील विविध साहित्य प्रकार (S1)	**Objectives :** १. मराठी साहित्यप्रकारांच्या तात्त्विक घटकांचे ज्ञान देणे. २. साहित्य विषयक अभिरुची निर्माण करणे. ३. साहित्याचे आकलन व मूल्यमापन करण्याची दृष्टी निर्माण करणे. ४. मराठीतील अभिजात साहित्यकृतीचा संस्कार घडवणे. ५. साहित्याचा सूक्ष्म पातळीवर अभ्यास करण्याची क्षमता विकसित करणे. **Outcome :** १. मराठी साहित्यप्रकारांच्या तात्त्विक घटकांचे ज्ञान झाले. २. साहित्याचे आकलन व मूल्यमापन करण्याची दृष्टी निर्माण करण्यात आली. ३. साहित्याचा सूक्ष्म पातळीवर अभ्यास करण्याची क्षमता विकसित झाली.
	अर्वाचीन मराठी वाङ्मयाचा इतिहास (१८१८-१९६०) (S2)	**Objectives :** १. मराठी साहित्य परंपरेचे स्थूल ज्ञान करून देणे. २. विशिष्ट कालखंडाच्या साहित्यामागील प्रेरणा ज्ञात करून देणे. ३. विशिष्ट कालखंडाच्या साहित्यामागील प्रवृत्ती ज्ञात करून देणे. ४. साहित्यप्रकारांच्या विकसनशील परंपरेचे स्थूल ज्ञान करून देणे. ५. साहित्याच्या पार्श्वभूमी संबंधी आकलन करून देणे. **Outcome :** १. मराठी साहित्य परंपरेचे स्थूल ज्ञान प्राप्त झाले. २. विशिष्ट कालखंडाच्या साहित्यामागील प्रेरणा आणि प्रवृत्ती ज्ञात झाल्या. ३. साहित्याची पार्श्वभूमी आकलन झाली.
TYBA	आधुनिक मराठी साहित्य आणि उपयोजित	**Objectives :** १. आधुनिक मराठी साहित्यातील विविध वाङ्मयप्रकारांचा परिचय वाढवणे. २. भाषिक कौशल्याची व संपर्क माध्यमे यांचा परस्पर संबंध समजावून

	मराठी (G3-k/v)	देणे. ३. भाषेचे यथोचित आकलन व वापर करण्याची क्षमता विकसित करणे. ४. मराठीचा कार्यालयीन कामकाजात होणारा वापर, गरज ज्ञात करून देणे. ५. विद्यार्थ्यांची वाचन व लेखन क्षमता विकसित करून त्यांच्या मध्ये साहित्य परीक्षणाची आवड निर्माण करणे. **Outcome :** १. आधुनिक मराठी साहित्यातील विविध वाङ्मयप्रकारांचा परिचय झाला. २. भाषिक कौशल्ये विकसित झाली आणि संपर्क माध्यमे यांचा वापर करण्याचे कौशल्य प्राप्त झाले. ३. भाषेचे यथोचित आकलन व वापर करण्याची क्षमता विकसित झाली.
	साहित्यविचार (S3)	**Objectives :** १. साहित्याचे स्वरूप व प्रयोजने समजावून देणे. २. साहित्य निर्मितीची प्रक्रिया ज्ञात करून देणे. ३. साहित्याची आस्वाद आणि अभिरुची प्रक्रिया समजावून देणे. ४. साहित्य आणि समाज यातील परस्पर संबंध समजावून देणे. ५. साहित्यप्रकारची संकल्पना आणि वाङ्मयीन मूल्ये समजावून देणे. **Outcome :** १. साहित्याचे स्वरूप व निर्मितीची प्रयोजने समजली. २. साहित्याचा आस्वाद आणि अभिरुची प्रक्रिया विकसित झाली. ३. साहित्य आणि समाज यातील परस्पर संबंध समजला.
	भाषाविज्ञान (S4)	**Objectives :** १. भाषाकुलाची संकल्पना व उत्पत्तीचा अभ्यास करणे. २. मराठी भाषेचा उत्पत्ती काळ आणि स्थितीगती जाणून घेणे. ३. भाषा म्हणून मराठीच्या वाटचालीचा आढवा घेणे. ४. स्वनिम संकल्पना आणि रुपिम व्यवस्था समजावून देणे. ५. वाक्यविन्यास व अर्थविन्यास या वैज्ञानिक संकल्पनांचा सूक्ष्म परिचय करून देणे. **Outcome :** १. भाषाकुलाची संकल्पना व उत्पत्तीचा अभ्यास झाला. २. मराठी भाषेचा उत्पत्ती काळ आणि स्थितीगती याविषयीचे ज्ञान प्राप्त झाले. ३. भाषा म्हणून मराठीच्या वाटचालीचा आढवा समजला. ४. स्वनिम संकल्पना आणि रुपिम व्यवस्था समजली.
MA Programme		

Class	Course Name	Course Objectives & Outcome
M.A.- I	भाषाव्यावहार आणि भाषिक कौशल्य भाग १/ भाग २	**Objectives :** १. विविध स्तरावरील भाषिक कौशल्य व क्षमता विकसित करणे. २. व्यक्तिमत्व विकास व भाषिक कौशल्य परस्पर संबंध समजावून देणे. ३. प्रसारमाध्यमे स्वरूप समजावून देणे. ४. मुलाखत लेखन व भाषांतर या कौशल्याचे स्वरूप समजावून देणे. ५. जनसंपर्क कौशल्याची आवशकता व तंत्रे समजावणे. **Outcome :** १. विविध स्तरावरील भाषिक कौशल्य व क्षमता विकसित झाल्या. २. मुलाखत लेखन व भाषांतर या कौशल्याचा विकास झाला. ३. जनसंपर्क कौशल्याची आवशकता व तंत्रे समजली.
	अर्वाचीन मराठी वाङ्मयाचा इतिहास (इ.स. १८१८ ते इ.स. २०१०)	**Objectives :** १. मराठी साहित्य परंपरेचे स्थूल ज्ञान करून देणे. २. विशिष्ट कालखंडाच्या साहित्यामागील प्रेरणा ज्ञात करून देणे. ३. विशिष्ट कालखंडाच्या साहित्यामागील प्रवृत्ती ज्ञात करून देणे. ४. साहित्यप्रकारांच्या विकसनशील परंपरेचे स्थूल ज्ञान करून देणे. ५. साहित्याच्या पार्श्वभूमी संबंधी आकलन करून देणे. **Outcome :** १. मराठी साहित्य परंपरेचे स्थूल ज्ञान प्राप्त झाले. २. विशिष्ट कालखंडाच्या साहित्यामागील प्रेरणा आणि प्रवृत्ती ज्ञात झाल्या. ३. साहित्याची पार्श्वभूमी आकलन झाली.
	ऐतिहासिक भाषाविज्ञान आणि सामाजिक	**Objectives :** १. भाषाकुलाची संकल्पना व उत्पत्तीचा अभ्यास करणे. २. मराठी भाषेचा उत्पत्ती काळ आणि स्थितीगती जाणून घेणे. ३. भाषा म्हणून मराठीच्या वाटचालीचा आढवा घेणे. ४. समाजातील भाषा उपयोजनातील विविधता समजून घेणे. ५. सामाजिक भाषाविज्ञान संकल्पना, स्वरूप व व्याप्ती अभ्यासणे. **Outcome :** १. भाषाकुलाची संकल्पना व उत्पत्ती समजली. २. मराठी भाषेचा उत्पत्ती काळ आणि स्थितीगती समजली. ४. समाजातील भाषा उपयोजनातील विविधतेचे आकलन झाली. ५. सामाजिक भाषाविज्ञान संकल्पना, स्वरूप व व्याप्ती समजली.
	ऐच्छिक : ग्रामीण / दलित	**Objectives :** १. ग्रामीण साहित्याची निर्मिती व कारण परंपरा समजावून देणे. २. दलित साहित्याची निर्मिती व कारण परंपरा समजावून देणे.

	साहित्य	३. ग्रामीण साहित्याचे स्वरूप व कार्य यांची चिकित्सा करणे. ४. दलित साहित्यातील वेदना, विद्रोह याचे स्वरूप समजावून देणे. ५. ग्रामीण व दलित साहित्याचे योगदान, गती आणि दिशा यांची मीमांसा करणे. **Outcome :** १. ग्रामीण आणि दलित साहित्याची निर्मिती व कारण परंपरा समजली. २. ग्रामीण साहित्याचे स्वरूप व कार्य यांची माहिती मिळाली. ३. दलित साहित्यातील वेदना, विद्रोह याचे स्वरूप समजले. ४. ग्रामीण व दलित साहित्याचे योगदान, गती आणि दिशा यांचे आकलन झाले.
M.A.- II	प्रसारमाध्यमे आणि साहित्यव्यवहार	**Objectives :** १. लेखन कौशल्य आत्मसात करण्यास मदत करणे. २. प्रसारमाध्यमाचे समाजातील महत्त्व विशद करणे. ३. प्रसारमाध्यमातील मराठी भाषेचे स्थान स्पष्ट करणे. ४. प्रसारमाध्यमासाठी भाषिक क्षमता विकसित करणे. ५. प्रसारमाध्यमे आणि साहित्यव्यवहार यातील परस्पर संबंध समजावून देणे. **Outcome :** १. प्रसारमाध्यमासाठीचे लेखन कौशल्य आत्मसात झाले. २. प्रसारमाध्यमासाठी भाषिक क्षमता विकसित झाल्या. ३. प्रसारमाध्यमे आणि साहित्यव्यवहार यातील परस्पर संबंध स्पष्ट झाला.
	साहित्य : समीक्षा व संशोधन	**Objectives :** १. साहित्य समीक्षा व्यवहाराची समज व संकल्पना समजावून देणे. २. समीक्षा पद्धतीमागील दृष्टी समजावून देणे. ३. मराठी साहित्य समीक्षकांची परंपरा व क्षमता ज्ञात करून देणे. ४. संशोधनाची संकल्पना, प्रयोजने व पद्धती समजावून देणे. ५. संशोधन करण्याची दृष्टी व क्षमता विकसित करणे. **Outcome :** १. साहित्य समीक्षा व्यवहाराची समज व संकल्पना समजली. २. मराठी साहित्य समीक्षकांची परंपरा व क्षमता विकसित झाल्या. ३. संशोधनाची संकल्पना, प्रयोजने व पद्धती समजल्या.
	विशेष लेखकाचा अभ्यास (मध्ययुगीन / अर्वाचीन)	**Objectives :** १. एका लेखकाची वाङ्मयीन जडण-घडण समजावून देणे. २. लेखकाचा काळ व साहित्य निर्मिती यातील संबंधाचा शोध घेणे. ३. लेखकाच्या लेखनातील परिवर्तन वौविध्य आकलन करणे.

		४. लेखकाचे स्थान व जीवननिष्ठा विशद करणे. ५. लेखकाचे योगदान व त्याचे तौलनिक आकलन करणे. **Outcome :** १. एका लेखकाची वाङ्मयीन जडण-घडण समजली. २. लेखकाच्या लेखनातील परिवर्तन वौविध्य आकलन झाले. ३. लेखकाचे स्थान व जीवननिष्ठा विशद झाल्या.
	ऐच्छिक : लोकसाहित्याची मूलतत्त्वे आणि मराठी लोकसाहित्य	**Objectives :** १. लोकसाहित्याची संकल्पना समजावून देणे. २. लोकसाहित्याचे स्वरूप व व्याप्ती समजावून घेणे. ३. लोकसाहित्याची सर्वसमावेशता लक्षात आणून देणे. ४. लोकसाहित्यातील विविध प्रकार समजावून देणे. ५. मराठी लोकसाहित्यातील सामाजिक, सांस्कृतिक, धर्मिक जाणिवा स्पष्ट करणे. **Outcome :** १. लोकसाहित्याची संकल्पना, स्वरूप व व्याप्ती आकलन झाली. २. लोकसाहित्यातील विविध प्रकार समजले. ३. मराठी लोकसाहित्यातील सामाजिक, सांस्कृतिक, धर्मिक जाणिवा स्पष्ट झाल्या.

Department of Geography

Program Outcomes (PO):

- **PO1: Basic knowledge:** apply and analyze the knowledge of basic in physical and human Geography.
- **PO2: Problem Analysis:** Identify study of Relief, to understand terms and particular concepts in weather and climatology.
- **PO3:** Impart in-depth knowledge of the various aspects in Geography.
- **PO4: Critical Thinking:** Understand the working principles of all subjects and have experimental skill in different fields of geography.
- **PO5: Effective communication:** Apply the basic knowledge in settlement, agriculture, industries, tourism and cultural geography.
- **PO6: Modern tool usage:** To understand and analyzed the knowledge of in remote sensing, Geographical information system (GIS).
- **PO7:** Understand, identify and analyzed the knowledge such as, origin of the Earth, formation of mountains features as well as different types of weather, concepts in economic Geography, relationship between environment and human activity etc**.**

Program specific outcomes (PSO) Geography:

A degree in Geography provides with the wide range of transferrable skills which is important

- **PSO1:** Understand the working principles, design guidelines and experimental skills associated with different fields of Geography.
- **PSO2:** Surveyor in cartographer in map making divisions of Government.
- **PSO3:** Serve as conservator in forest, Soil, Agricultural Departments.
- **PSO4:** Identify and understand environment and population.
- **PSO5:** Work in disaster and water resources management.

Course Outcomes (CO):

1. F. Y. B. A. Elements of Geomorphology (G1)

A) Objectives:

1. To introduce the students to the basic in physical Geography
2. To explain the students of physical features with the formation of ocean and land.
3. To develop the basic concept about the Earth.
4. To introduce the students to theories related earth's movement.
5. To acquaint the knowledge of formation of mountains, valley and trench.
6. To acquaint the knowledge in endogenetic and exogenetic process.
7. To introduce about the slope, and application of geomorphology in human activity.

B) Outcomes:

1. Introduced the students to the knowledge in physical geography.
2. Acquainted the knowledge of formation of land and ocean.
3. Student understands the theories in physical geography to develop their view about the formation of different relief features.
4. acquainted the students with the endogenetic and exogenetic process.
5. Developed their attitude in the applied geomorphology.

2. S.Y. B. A. Geography of Disaster Management (G2)

A) Objectives:

1. To give basic knowledge of Disaster and relationship between with geography.
2. To explain the structural and Nonstructural measures in disaster management.
3. To acquire information about climatic, earth's and anthropogenic disasters.
4. To acquire the causes, effects and remedies in disaster.
5. To search the articles, news and case studies in disaster management.

B) Outcomes:

1. The students acquired the information about disaster management.
2. Acquired information about climatic, earth's and anthropogenic disasters.
3. The students improved their role in environment.
4. The students increased the knowledge in research.

3. S.Y. B. A. Tourism Geography (S1)

A) Objectives:

1. To study the different elements of geography and their relationship with tourism.
2. To identify key tourism attractions from state, international and global dimension.
3. To describe the major climatic elements which is affects on tourism and identify the world climatic zones.
4. To observe the ethnic culture and religions of major tourism destinations

B) Outcomes:

1. Study the different elements of geography and their relationship with tourism.
2. Identify key tourism attractions from state, international and global dimension.
3. Describe the major climatic elements that affect tourism and identify the world climatic zones.
4. Observed the ethnic culture and religions of major tourism destinations.

4. S.Y.B. A. Fundamentals of Geographical Analysis (S2)

A) Objectives:

1. To enable the students to use various Projections and Cartographic Techniques.
2. To acquaint the students with basic of Map and types of map.
3. To acquaint the students with the Statistical information.
4. To give the knowledge in principles of surveying, its importance and utility in the geographical study

B) Outcomes:

1. Enable the students to use various Projections and Cartographic Techniques.
2. Acquainted them with the basic of Map and types of map.
3. Encouraged the students to make a detailed study in Statistical information.
4. Developed among the students an ability of reading and appreciating drama.

5. T.Y.B. A. Regional Geography of India (G3)

A. Objectives –

1. To acquaint the students with basic in physical structure of India.
2. To enable the students in river system of India. Such as Ganga and its tributary, Sindhu and Brahmhaputra's river system
3. To explain the students with the natural recourses in India with help of map.
4. To give the knowledge in principles of surveying, its importance and utility in the geographical study.
5. To make the students aware of the magnitude of problems and prospectus at

national level.

B. Outcome –

1. Acquainted the students in physical as well as human geography of India.
2. Enable the students in knowledge of river system of India.
3. Increased knowledge in the natural recourses in India with help of map.
4. Student got aware of the magnitude of problems and prospectus at national level.
5. Help the students to understand the inter relationship between the subject and the society.

6. T.Y.B. A. Agriculture Geography (S3)

A. Objectives:

1. To introduce the students to the basic principles and concepts in Agriculture Geography
2. To acquaint with the applications of Agriculture Geography in different areas and development.
3. To incorporate and understand the various factors of Agriculture development.
4. To acquaint with the dynamic aspect of Agriculture Geography.

B. Outcomes:

1. Introduced the students to the basic principles and concepts in Agriculture Geography
2. Acquainted with the applications of Agriculture Geography in different areas and development.
3. Incorporated and understand the various factors of Agriculture development.
4. Acquainted with the dynamic aspect of Agriculture Geography.

7. T.Y.B. A. Techniques of Spatial Analysis (S4)

A. **Objective**s –

1. To Introduce the Students with basic in Maps such as SOI Toposheets.
2. To acquire the Knowledge of Reading and Interpretation of Toposheet.
3. To acquaint the students with IMD weather maps and to gain the knowledge of weather map reading and interpretation.
4. To train the students in elementary statistics as an essential part of geography, such as central tendency, standard deviation, student t test, chi square test etc.
5. To awareness about remote sensing and geographical information system (GIS) among the students

B. Outcome –

1. Students brought up with the basic in Maps such as SOI Toposheets.
2. Acquired the Knowledge of Reading and Interpretation of Toposheet.
3. Acquainted the students with IMD weather maps and to gain the knowledge of weather map reading and interpretation.
4. Student trained in the elementary statistics as an essential part of geography, such as central tendency, standard deviation, student t test, chi square test etc.
5. Student understands about remote sensing and geographical information system (GIS).

8. Carrier Oriented Course in Travel and Tourism

A. Objectives:-

1. To understand the influence of the elements of the geographical environment.
2. To analyze in state, national as well as international tourist flows and major destinations.
3. To understand the different dimensions of tourism and their interrelationships.
4. To learn recent trends and dynamics of tourism in the context of globalization and sustainability.
5. To know the geographical, social, economic, political, cultural particularities of tourism resources and destinations.
6. To develop critical thinking skills about the processes of Travel and Tourism.
7. To manage different sources of information for analyzing tourism.

B. Outcomes:-

1. Student understands the influence of the elements of the geographical environment.
2. Student analyzed in state, national as well as international tourist flows and major destinations.
3. Understand the different dimensions of tourism and their interrelationships.
4. Learned recent trends and dynamics of tourism in the context of globalization and sustainability.
5. Know the geographical, social, economic, political, cultural particularities of tourism resources and destinations.
6. Developed critical thinking skills about the processes of Travel and Tourism.

7. Managed different sources of information for analyzing tourism.

Department of Economics

PO PSO & CO:

Programme Outcomes of BA (PO):

- **Basic knowledge:** apply and analyze the knowledge of languages and social sciences.
- **Problem Analysis:** Identify, study of literature, understand terms and particular concepts. Identify, formulate and analyze complex ideas in the social sciences.
- **Critical Thinking:** Identify the assumptions, checking out the degree to which assumptions are accurate and valid looking out the correct perspectives.
- **Effective communication:** Apply the basic knowledge to listen, speak, read and write clearly to understand English knowledge.
- **Modern tool usage:** To understand and analyzed the knowledge of ICT in communications.
- **Ethics and values:** Apply the ethical principles and understand the responsibilities of the societies.
- **Communications:** To communicate effectively in the society such as being able to comprehend and write effective reports and design documents for making effective presentation and exchange clear information.

Programme Specific Outcomes (PSO): Economics

The principal aims of objectives of the BA Economics programme are:

- To provide students a well-founded education in Economics;
- To provide structured curricula which support the academic development of Students.
- To provide and adapt curricula that prepare our graduates for employment and further study as economists;
- To provide the students with the opportunity to pursue courses that emphasize quantitative and theoretical aspects of Economics;
- To provide students with the opportunity to focus on applied and policy issues in Economics;
- To provide programmers that allow the students to choose from a wide range of economic specialization;
- To provide a well-resourced learning environment for Economics.

Course wised Outcome (CO): Economics

BA Programme		
Class	**Course Name**	**Course Outcome**
FYBA	Indian Economy; Problems & Prospects (G1)	1) The emphasis of this paper is on understanding economic concepts with the help of Indian economy. 2) In this paper a student will be initiated into various economies' problems, which are related to current issues. 3) This course develop practical skill and to the different skill and abilities of students. 4) Students are doing practical work in different modules on regional economic aspects and they understand the Indian economic problems.
SYBA	Modern Banking (G2)	1) This course awareness among the students of Modern Banking System and banking constitutes important components towards understanding of economics. 2) Clear understanding of the operations of banking their interaction with the rest of the economy is essential to realize how monetary forces operate through a multitude of channels- market, non-market, institutions and among others factors.
	Micro Economics(S1)	1) In this Paper, student is expected to understand the behavior of an economic agent, namely, a consumer, a producer, a factor owner and the price fluctuation in a market. 2) The course incorporated in this Paper deal with the nature and scope of economics, the theory of consumer behavior, analysis of production function and equilibrium of a producer, the price formation in different markets structures and the equilibrium of a firm and industry. 3) The principles of factor pricing and commodity pricing as also the problems of investment and welfare economics have been included.
	Macro Economics(S2)	1) On account of the growing influence and involvement of the State in economic fields, macroeconomics has become a major area of economic analysis in terms of theoretical, empirical as well as policy-making issues. 2) It deals with the functioning of the economy as a whole, the objective of the course is to familiarize the students the basic concept of Macro Economics and application 3) It deals with the functioning of the economy as a whole, including how the economy's total output of goods and services and employment of resources is determined and what causes these totals to fluctuate.
TYBA	Planning & Development(G3)	1) The Study of Economic Development has gained importance because of stained interest of the developing countries in uplifting their economic conditions by restructuring their economics to acquire greater diversity, efficiency and equity in Consonance with their priorities. 2) For this and other reasons, there have been many approaches to economic development. 3) In recent times, besides hard core economic prescriptions to development, concern hitherto relegated to background, like education, health, sanitation and infrastructural development, have found place of pride in explaining the preference of various problems in developing countries.

	International Economics (S3)	1) This course provides the students a thorough understanding and deep knowledge about the basic principles that tend to govern the free flow of trade in goods and services at the global level. 2) The contents of the Paper spread over various modules, lay stress both on theory and applied nature of the subject that have registered rapid changes during the last decade. Besides this, the contents prepare the students to know the impact of free trade and tariffs on the different sectors of the economy as well as at the macro level. 3) The students would also be well trained about the rationale of recent changes in the export import policies of India. 4) This paper has become relatively more relevant from the policy point of view under the present waves of globalization and liberalization both in the North and in the South.
	Public Finance (S4)	1) The main objective of this paper is to train the students to use the techniques of statistical analysis, which are commonly applied to understand and analyze economic problems. 2) The emphasis of this paper is on understanding economic concepts with the help of statistical methods. 2) Hence in this paper a student will be initiated into various economic concepts, which are amenable to statistical tools. 4) The paper also deals with simple tools and techniques, which will help a student in data collection, presentation, analysis and drawing inferences about various statistical hypotheses.

Programme Outcomes of MA (PO):

- **Basic knowledge:** apply and analyze the knowledge of languages and social sciences.
- **Problem Analysis:** Identify, study of literature, understand terms and particular concepts. Identify, formulate and analyze complex ideas in the social sciences.
- Understand, identify and analyzed the knowledge such as, code of conduct of society, manners, cultural issues, political issues, economical, historical and geographical etc.
- **Critical Thinking:** Identify the assumptions, checking out the degree to which assumptions are accurate and valid looking out the correct perspectives.
- **Effective communication:** Apply the basic knowledge to listen, speak, read and write clearly to understand English knowledge.
- **Modern tool usage:** To understand and analyzed the knowledge of ICT in communications.
- **Ethics and values:** Apply the ethical principles and understand the responsibilities of the societies.

Programme Specific Outcomes (PSO): Economics

At the completion of M.A. in Economics the students are able to:

- P.G. students understand the important concepts of economics with applied study.
- Field visits and survey help to understand the basic theories of economics in practical world

- This programme motivates and inspires students to undertake projects on various economic issues of local area through personal interaction.
- This programme also generates awareness amongst students about changing Environment in economics.
- The ability to analyze historical and current events from an economic perspective. To create students ability to suggest of the various economic problems.
- The ability to write clearly expressing an economic point of view.
- Be exposed to alternative approaches to economic problems through exposure to coursework of allied fields.

Course wised Outcome (CO): Economics

MA Programme		
Class	**Course Name**	**Course Outcome**
MA I	Micro Economic Analysis	The course entitled "Micro Economic Analysis" equips the students at the postgraduate level to understand systemic facts and latest theoretical developments for empirical micro analysis like demand, supply income and consumer satisfaction.
	Public Economics	A Role and functions of the Government in an economy have been changing with the passage of time. The term 'Public Finance' has traditionally been applied to the package of those policies and operations which involve the use of tax and expenditure measures while budgetary policy is an important part to understand the basic problems of use of resources, distribution of income, etc
	International Trade	The course intends to make students aware about the changing scenario of the international trade nature, theories, structure, performance and the current problems in India and also in the world.
	Labour Economics	The course equips the students at the postgraduate level to understand systemic facts and latest theoretical developments for empirical analysis about labour.
MA II	Macro Economic Analysis	The course entitled "Macro Economic Analysis" equips the students at the postgraduate level to understand systemic facts and latest theoretical developments for empirical analysis.
	Growth & Development	The course includes the evolution of growth models as well as important concepts such as poverty, inequality and population dynamics in the context of developing countries.
	Modern Banking	The course intends to make students aware about the changing scenario of the modern banking role, structure, performance and the current problems faced by the banking sector in India and also in the world.
	Demography	This paper is to make the students aware of the importance of population in economic development and the various theories that explain the growth of population in a country.

Department: Political Science

Program Outcomes (PO):

- **PO1: Basic knowledge:** apply and analyze the knowledge of social sciences.
- **PO2: Problem Analysis:** Identify, understand terms and particular concepts. Identify, formulate and analyze complex ideas in the social sciences.
- **PO3:** Understand, identify and analyzed the knowledge such as, code of conduct of society, manners, cultural issues, political issues, economical, historical and geographical etc.
- **PO4: Critical Thinking:** Identify the assumptions, checking out the degree to which assumptions are accurate and valid looking out the correct perspectives.
- **PO5: Effective communication:** Apply the basic knowledge to listen, speak, read and write clearly to understand English knowledge.
- **PO6: Modern tool usage:** To understand and analyzed the knowledge of ICT in communications.
- **PO7: Ethics and values:** Apply the ethical principles and understand the responsibilities of the societies.
- **PO8: Communications:** To communicate effectively in the society such as being able to comprehend and write effective reports and design documents for making effective presentation and exchange clear information.

Program specific outcomes (PSO)Political Science

A degree in Political Science provides with the wide range of transferrable skills which is important

- **PSO1:** Understand the basic principles of politics .
- **PSO2:** Awareness of their rights .
- **PSO3:** Understand the code of conduct political issues.
- **PSO4:** Understand the new trends and study of political science such as LPG, Good Governess and political parties etc.

Course Outcomes (CO):

1.B. A. I- Political Science General-1

Indian Government & Politics

A) Objectives:

1. To Student understand the philosophy if Indian Constitution
2. To Student identify the causes, impacts of British Colonial Rule
3. To understand the various Government of Indian Acts
4. To appreciate the various phases of Indian National Movement

B) Outcomes:

1. Student understood the philosophy if Indian Constitution
2. Student identified the causes, impacts of British Colonial Rule
3. Understood the various Govt. of Indian Acts
4. Students appreciated the various phases of Indian National Movement

2.B A II Western Political Thought S-I

B) Objectives:

6. To Student will demonstrate of knowledge key thinkers & concept
7. To Students will compare thinkers on similar concept
8. To Students use various concepts to analyze new situation

B) Outcomes:

1. Student will demonstrated of knowledge key thinkers & concept
2. Students will compared thinkers on similar concept
3. Students used various concepts to analyze new situation

3. B A II Political Sociology S-II

C) Objectives:

1. To understand the intellectual foundation of Political Sociology
2. To understand the political culture
3. To understand the process & agencies of socialization

D) Outcomes:

1. Understood the intellectual foundation of Political Sociology
2. Understood the political culture
3. Understood the process & agencies of socialization

4.B. A. II Political Theory & Concept G-II

A) Objectives:

1. To understand the concept of State & Civil Society

2. To Learn the origin of the concept such as law, power, authority & legitimacy etc.

3. To understand the nature & scope of political theory

4. To evaluate the theories of origin of the states

B) Outcomes:

1. Understood the concept of State & Civil Society

2. Learned the origin of the concept such as law, power, authority & legitimacy etc.

3. Understood the nature & scope of political theory

4. Evaluated the theories of origin of the states

5.B.A.-III Public Administration S-III

A. Objectives:

1. To understand the scope & significance of public administration

2. To introduce new approaches of public administration

3. To students will be able to analyze, think critically, solve problems & make decision

B. Outcome:

1. Understood the scope & significance of public administration
2. learned new approaches of public administration
3. students should be able to analyze, think critically, solve problems & make decision

6.B.A.-III International Politics

A. Objectives :

1. To understand the evolution, scope & significance of International Politics
2. To criticized the various ideologies which lead to destruction of world
3. To identify various issues & challenges toward International Politics
4. To understand the International Political Economy

B. **Outcome :**

1. Understood the evolution, scope & significance of International Politics
2. Criticized the various ideologies which lead to destruction of world
3. Identified various issues & challenges toward International Politics
4. Understood the International Political Economy

7.B.A.-III Political Ideology G-III

A. **Objective**s:

1. To understand the concept of Political Ideology

2.To understand the general framework for the interpretation of the ideology

3. To understandthe different aspects of several contemporary ideology

B. **Outcome** –

1. Understood the concept of Political Ideology
2. Understood the general framework for the interpretation of the ideology
3. Understood the different aspects of several contemporary ideology

8.B.A.-III Local Self Government of Maharashtra G-III

A. Objectives:

1. To understand the evolution, scope & significance of local self Govt. of Maharashtra

2. To understand the 73^{rd}& 74^{th} amendments of Indian Constitution

3.To understand the various structure & functions of Local Self Government

B. Outcome:

1. Understood the evolution, scope & significance of local self Govt. of Maharashtra
2. Understood the 73^{rd}& 74^{th} amendments of Indian Constitution
3. Understood the various structure & functions of Local Self Government

DEPARTMENT OF PSYCHOLOGY

PO PSO &CO:

Programme Outcomes of BA (PO):

PO1: Beahaviour: Students modified their behavior as per the moral value, ethics and learnt to express themselves in socially acceptable way.

PO2: Application of Psychological knowledge: Students demonstrate their abilities to apply what they have learned regarding the basic issues in Psychology to factual, practical, theoretical, and philosophical issues by participating in various activities.

PO3: Interaction: Students make meaningful interaction in group/society and Communicate their ideas effectively in writing and orally.

PO4: Personality: Students have developed personality traits and they reflect the same through their demeanor.

PO5: Leadership: Leadership qualities are developed among students which enables them to take initiatives, develop positive attitude, and solve problems and to take decisions.

PO6: Understanding human nature: Students developed understanding of human nature which motivate and direct their learning, growth and conduct and make them good Citizens.

Program specific outcomes (PSO) Psychology

PSO1: Inculcate moral value and ethics in students.

PSO2: Developed knowledge and skills required to engage in practice or research in a specific area within psychology

PSO3: Enable students to make meaningful interaction in groups/society.

PSO4: Developed the personality traits among students.

PSO5: Developed leadership quality.

PSO6: Bring about the behavioral change of the student and make them good citizen.

Course Outcomes (CO):

1. B. A. I- General Psychology.

A) Objectives:

1) To enable students to understand the Psychological concepts and develop a knowledge base of human behavior across the broad areas of psychology.

2) To enable students to develop problem solving ability.

3) Make students aware of the applications of psychology in the professions associated with psychology and for day today situations.

4) To improve emotional intelligence of the students and motivate them to face any eventuality with confidence

B) Outcomes:

By the time student's complete course, they will

1) Understand the psychological concepts and they know the basics of human behaviour.

2) Have developed problem solving ability.

3) See improvement of emotional intelligence.

4) Be motivated to take challenging task.

2. B. A.II- Social Psychology.

A) Objectives:

1) To enable students to make meaningful interaction with people.

2) To make the socialization process easier.

3) To develop leadership quality among students.

4) To enable students to identify and develop self.

5) To enable students to develop effective interpersonal relations.

B) Outcomes:

By the time student's complete course, they will

1) Make meaningful interaction with people/society without fear and put their point across

Successfully.

2) Make socialization process very easy.

3) Develop leadership quality and they take initiative to take decisions and solve problems.

4) Identify and develop their self.

5) Develop effective interpersonal relation.

3. B. A. III-Industrial and Organization Psychology.

A) Objectives:

1) To introduce students to concepts related to industrial and organizational psychology.

2) To study the organizational behavior of different individual.

3) To acquaint students with work motivation.

5) To introduce students to human engineering.

6) To help students to understand the concept of job satisfaction.

B) Outcomes:

By the time student's complete course, they will

1) Know concepts related to industrial psychology.

2) Know the organizational behaviour of different individuals.

3) Have the proper knowledge of different work motivations.

4) Develop leadership qualities required in industrial and organizational field.

5) Know human engineering.

6) Know the importance of job satisfaction.

DEPARTMENT OF COMMERCE

UG/PG

(Skills, Values and Competencies acquired by students through Curriculum)

Programme Outcomes (PO):

- **PO1: Basic knowledge:** apply and analyze the knowledge of Commerce and Management
- **PO2: Problem Analysis:** Identify, study of Commerce, understand terms and particular concepts. Identify, formulate and analyze complex ideas in the Commerce and management
- **PO3:** Understand, identify and analyzed the knowledge such as, code of conduct of Business, law, marketing, share market, Entrepreneurship, E- Filing etc.
- **PO4: Critical Thinking:** Identify the assumptions, checking out the degree to which assumptions are accurate and valid looking out the correct perspectives.
- **PO5: Effective communication:** Apply the basic knowledge to listen, speak, read and write clearly to understand Business Communication Skills.
- **PO6: Modern tool usage:** To understand and analyzed the knowledge of E-filing, Rule and Regulation under the Law.

PO7: Ethics and values: Apply the ethical principles and understand the responsibilities of the societies.

- **PO8: Communications:** o communicate effectively in the society such as being able to comprehend and write effective reports and design documents for making effective presentation and exchange clear information.

Programmed Specific Outcomes (PSO) - Commerce

A degree in Commerce provides with the wide range of Practical skills which is very important.

- **PSO1:** Ability for clear expression for both Verbal and Non- Verbal communication..
- **PSO2:** Attend the potential knowledge of Accounting and Taxation, their trends and terms.
- **PSO3:** Understand the code of conduct Business law, corporate law issues.
- **PSO4:** Understand the various Marketing Strategy. and study of Entpreneur skills etc.

Class: B.COM (UG)

Sr. No.	**Objectives**
1.	To impart the knowledge of various accounting concepts
2.	To instill the knowledge about accounting procedures, methods and techniques.
3.	To acquaint them with practical approach to accounts writing by using software package.
4.	To prepare for competitive examinations.
5.	To understand the concept of Simple interest, compound interest and the concept of EMI.
6.	To know the functioning of Modern office appliances equipment's and e-format records

Sr. No.	**Learning Outcomes**
1.	Practical approach to accounts writing by using software package.
2.	Modern office appliances equipment's and e- format records
3.	Communication, Study and Analytical skills.
4.	Their employability enhances becomes the medium of their livelihood and personality.
5.	Students for seeking suitable careers in management and entrepreneurship.
6.	knowledge of various accounting concepts

Class: M.COM. (PG)

Sr. No.	**Objectives**
1.	To equip and train Post Graduate students to accept the challenges of Business World by providing opportunities for study and analysis of advanced Commercial and business methods and processes

2.	To develop independent logical thinking and facilitate personality development.
3.	To equip the students for seeking suitable careers in management and entrepreneurship.
4.	To study by students methods of Data collection and their interpretations.
5.	To develop among students Communication, Study and Analytical skills.

Sr. No.	**Learning Outcomes**
1.	To accept the challenges of Business World by providing opportunities
2.	To understand methods of Data collection and their interpretations age.
3.	Communication, Study and Analytical skills.
4.	Their employability enhances becomes the medium of their livelihood and personality.
5.	Students for seeking suitable careers in management and entrepreneurship.

Rayat Shikshan Sanstha's

Annasaheb Awate College, Manchar

Department of Physics

Sr. No.	Program	Program Objectives	Program Specific Outcomes
1	B. Sc. Physics	To provide in depth knowledge of scientific and technological aspects of Physics · To familiarize with current and recent scientific and technological developments · To enrich knowledge through problem solving, hand on activities, study visits, Projcets, etc. · To train students in skills related to research, education, industry, and market. · To create foundation for research and development in Electronics · To develop analytical abilities towards real world problems · To help students build-up a progressive and successful career in Physics	1. After completion of program, students will be able to have in-depth knowledge of basic concepts in Physics. 2. Students will be able to apply the laws of Physics in real life situations to solve the problems. 3. Students develop aptitude of doing research through undertaking small projects. 4. Student will have set his foundation to pursue higher education in Physics. 5. After completing the program student will have developed interdisciplinary approach and can pursue higher studies in subjects other than Physics

Sr. No.	Course	Course Outcome
1	F. Y. B. Sc. 1. Mechanics	1. Demonstrate an understanding of Newton's laws and applying them in calculations of the motion of simple systems. 2. Use the free body diagrams to analyse the forces on the object. 3. Understand the concepts of energy, work, power, the concepts of conservation of energy and be able to perform calculations using them. 4. Understand the concepts of elasticity and be able to perform calculations using them. 5. Understand the concepts of surface tension and viscosity and be able to perform calculations using them. 6. Use of Bernoulli's theorem in real life problems. 7. Demonstrate quantitative problem solving skills in all the topics covered.
	2. Heat and Thermodynamics	1. Describe the properties of and relationships between the thermodynamic properties of a pure substance. 2. Describe the ideal gas equation and its limitations. 3. Describe the real gas equation. 4. Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process.

	5. Analyze the heat engines and calculate thermal efficiency. 6. Analyze the refrigerators, heat pumps and calculate coefficient of performance. 7. Understand property 'entropy' and derive some thermo dynamical relations using entropy concept. 8. Understand the types of thermometers and their usage.
3. Physics Principles and Applications	1. To demonstrate an understanding of electromagnetic waves and its spectrum. 2. Understand the types and sources of electromagnetic waves and applications. 3. To understand the general structure of atom, spectrum of hydrogen atom. 4. To understand the atomic excitation and LASER principles. 5. To understand the bonding mechanism in molecules and rotational and vibrational energy levels of diatomic molecules. 6. To demonstrate quantitative problem solving skills in all the topics covered.
4. Electromagnetic	1. Demonstrate an understanding of the electric force, field and potential, and related concepts, for stationary charges. 2. Calculate electrostatic field and potential of simple charge distributions using Coulomb's law and Gauss's law. 3. Demonstrate an understanding of the dielectric and effect on dielectric due to electric field. 4. Demonstrate an understanding of the magnetic field for steady currents using Biot-Savart and Ampere's laws. 5. Demonstrate an understanding of magnetization of materials. 6. Demonstrate quantitative problem solving skills in all the topics covered.
5. Practical	1. Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. 2. Demonstrate an ability to collect data through observation and/or experimentation and interpreting data. 3. Demonstrate an understanding of laboratory procedures including safety, and scientific methods. 4. Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena. 5. Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.

	Mathematical Methods in Physics I	After the completion of this course students will be able to 1.Understand the complex algebra useful in physics courses 2.Understand the concept of partial differentiation. 3.Understand the role of partial differential equations in physics 4.Understand vector algebra useful in mathematics and physics 5.Understand the singular points of differential equation. 6.Understand the Physicsal Significance of Gradient , Divergence and Curl of Physical Quantities
	Electronics I	1.Apply laws of electrical circuits to different circuits. 2.Understand the relations in electricity 3.Understand the properties and working of transistors. 4.Understand the functions of operational amplifiers. 5.Design circuits using transistors and operational amplifiers. 6.Understand the Boolean algebra and logic circuits.
	Oscillations, Waves and Sound	1.Solve the equations of motion for simple harmonic, damped, and forced oscillators 2.Understand the physics and mathematics of oscillations. 3.Formulate these equations and understand their physical content in a variety of applications 4.Describe oscillatory motion with graphs and equations, and use these 5.descriptions to solve problems of oscillatory motion. 6.Explain oscillation in terms of energy exchange, giving various examples. 7.Solve problems relating to undamped, damped and force oscillators and superposition of oscillations 8.Understand the mathematical description of travelling and standing waves. 9.Recognise the one-dimensional classical wave equation and solutions to it. 10.Calculate the phase velocity of a travelling wave. 11.Explain the Doppler effect, and predict in qualitative terms the frequency change that will occur for a stationary and a moving observer. 12.Define the decibel scale qualitatively, and give examples of sounds at various levels. 13Explain in qualitative terms how frequency, amplitude, and wave shape affect 14.The pitch, intensity, and quality of tones produced by musical instruments.
	Optics	1.acquire the basic concepts of wave optics 2.describe how light can constructively and destructively interfere 3.explain why a light beam spreads out after passing through an aperture

			4.summarize the polarization characteristics of electromagnetic waves 5.appreciate the operation of many modern optical devices that utilize wave 6.acquire the Knowledge about abberation
		Practicals (S.Y.B.Sc.)	Whatever the students learned in their theory courses such as, electronics , waves oscillations and sound and optics. They need to verify these concept. This course will help to student to verify the concept from theory.
	3	T. Y. B.Sc.	
		Mathematical Methods in Physics II (PH331)	There are following four modules in this course: 1. Curvilinear Co-ordinates 2. The Special Theory of Relativity 3. Differential equations 4. Special functions This course acts as a foundation for other courses taught in Physics. Under this course the basic and advanced mathematical background required for other courses such as; classical mechanics, quantum mechanics, statistical physics, electrodynamics etc. are taught to the students. After successfully completing this course students get thorough knowledge of basics of curvilinear co-ordinate system, differential equations, special functions and special theory of relativity.
		Classical Electrodynamics(PH341)	After completion of course students should 1. Be able to use method of images in electrostatics to solve the boundary value problems. 2. Should have understood the basic laws in magneto statics like Biot-Savart's law, Ampere's law etc. 3. have understood the concept of magnetic vector potential. 4. Have understood Maxwell's laws of electrodynamics. Be able to solve Maxwell's equations in free space and write equation of plane e-m waves
		Solid State Physics PH-332:	After completion of course students should 1. Have deep understanding of various types of crystal structures and should have understood the concept of reciprocal lattice. 2. Have clear idea of various characterization techniques like x-ray diffraction, UV-visible spectroscopy, SEM, TGA etc. 3. Have understood the free electron model, band formation and origin of band gap. 4. Be able to understand the theory of magnetism and phenomena like superconductivity.

Quantum Mechanics(PH342)	For T.Y.B.Sc., Quantum Mechanics course is a foundation course. In this course, student will learn the historical aspects of development of quantum mechanics, understand and explain the differences between classical and quantum mechanics, understand the idea of wave function and the uncertainty relations, solve Schroedinger equation for simple potentials. Also, students will gain a basic understanding of the formalism and 'language' of quantum mechanics especially commutation brackets, various quantum mechanical operators.
Classical Mechanics PH-333:	1. All the classical concepts are useful and applicable to day today life. 2. To understand and apply newtonian mechanics for macroscopic objects. 3. To understand central forced motion and its application for solar system. 4. To understand the lagrangian and Hamiltonion formulation which builds base for quantum mechanics
Thermodynamics and Statistical Physics (PH343)	Upon completion of this course, students clearly understand basic principles, be able to see relationships between ideas, and be able to use principles and ideas to calculate properties of simple statistical systems students will learnt assumptions of kinetic theory of gases, transport phenomenon.Thermodynamical functions and Maxwell Relations , Elementary concepts of Statistics such as probability, distribution functions, Gaussian Probability distribution etc. , Statistical distribution of system of particles, Different statistical ensembles: micro canonical, canonical and calculation of mean values in canonical ensembles, Maxwell-Boltzmann's, Bose Einstein , Fermi Dirac Statistics, comparison of the distribution. Problem solving on respective points.
Atomic and Molecular Physics(PH334)	The study of atoms and molecules has played a major role in the development of physics and in the development of our understanding of the structures of matter as it is encountered in everyday life. On successful completion of this course students will be able to understand about- 1. Development of Atomic structures starts from Rutherford's atomic model up to Vector atomic model. 2. Concept of atomic absorption and emission spectra, spectra associated with hydrogen atom 3. Pauli Exclusion Principle, Spectral notation for quantum states. 4. The concepts of space quantization, Spectra of sodium atom 5. LS and jj coupling schemes associated with two valence electron system. 6. The splitting of atomic energy levels and associated spectral lines when atoms are placed in external magnetic and electric field: Zeeman Effect, Stark Effect.

	7. The idea about x-ray spectroscopy, molecular spectroscopy. 8. Details about the Raman Effect and Applications.
Nuclear Physics(PH344)	The concepts and techniques may be used for both constructive as well as destructive purposes. To understand constituent particles of atoms To understand properties of nucleus To understand working of different types of atomic energy plants To understand redioactive decay processes To understand working of particles accelerators and detectors
Computational Physics (PH335)	For T.Y.B.Sc., Computational Physics course is a foundation course. In this course, student will learn basic concepts of algorithms and flowcharts, programming in C language, errors in computations and various numerical analysis methods such as, obtaining roots of a function, finding integration. Also, students will get practice of programming through small programs like sorting array, graphics, finding factorial, using functions and pointers etc.
Electronics/Advanced Electronics(PH345)	1. Able to design various circuits which can be used professionally. 2. Able to understand AC, DC current/voltages concept for safety measurements. 3. Able to design various types of power supply, which can be used professionally. 4. Able to design communication systems. 5. Able to understand the Signal Conditioning and Opamp
	6. Able to understand working of different types of sensors.
Elements of Materials Science	1. To know the general information regarding the properties of materials. 2. be aware of the social, safety and environmental consequences materials 3. To solve concepts in Materials Science to solve engineering problems. 4. It is easy to select materials for design and construction for various purposes. 5. Able to identify smart materials and use of them in day today life.
LASER	1. Student will understand meaning of laser and lasing processes 2. Student will understand characteristcs of laser 3. Student will understand working of different types of laser
	4. Student will understand the application of laser
Practical course- I	To increase the understanding depth of theoretical concept like properties of matter, quantum mechanics, nuclear physics, statistical mechanics, electrodynamics etc. After completing the course students should

				1. Be able gain necessary skills to perform experiments like verification of Stephan's Law, Determination of Plank's constant and Redberg's constant. 2. Have developed skills to plan experiments for studying the properties of matter like viscosity, Young's modulus and Thermal conductivity. 3. Be able to analyse data from experiments of x-ray diffraction. 4. Be able to plan and perform electronic experiments like Anderson's bridge, determination of energy gap of semiconductor etc. 5. Be able to plan and execute experiments for determination of M. I. of a bar by bifilar suspension method and electromagnetic pendulum.				
			Practical Course –II	After completing the course students should 1. Have acquired necessary skills to design astable multivibrator circuit using IC-555. 2. Be able to plan an experiment to study the characteristics of FET. 3. Be able to plan and perform experiment to determine the thickness of cylindrical obstacle by using diffraction of laser light 4. be able to write and execute simple programs in C language. 5. Be able to perform computer interfaced Physics experiments. 6. Should be able to analyse uv-visible spectroscopic data of semiconductor thin films. 7. Be able to determine particle size by using Scherer formula from XRD. 8. Be able to solve difficult integration byusing c programming 9. Be able to find root of given functionusing c programming				

Department of Chemistry

Program	Program Objectives (PO)	Program Specific Objectives (PSO)
B Sc. Chemistry	**PO1. CRITICALTHINKING** The curriculum is designed such way that students should acquire and ability to observe accurately and objectively. They should be able to solve the problems and also think scientifically, independently and draw rational conclusions. **PO2. EFFECTIVE COMMUNICATION** The medium of instruction for this course is English. English being the language of world students become habitual to communicate in English using language of Chemistry. **PO3 SOCIAL INTERACTIONS** In this course students are made aware of environment related issues. They are made aware of optimal use of fertilizers, water, fuels and drugs. **P04 EFFECTIVE CITIZENSHIP** In this program students are made aware of pollution problems waste water management, water treatment etc. They are also made aware importance of energy and water, food, fuels, general hygiene and cleanliness etc. **PO5 ETHICS** In this program students are made alerts regarding misuse of food adulteration, chemical technology, poisons, fungicides, pesticides and chemical and nuclear weapons **PO6 ENVIRNMENT AND SUSTAINABILITY** Being Chemistry students they become	**PSO 1** To provide the basic principles of all branches of chemistry knowledge of chemical principles and make them independent for the effective application of it. **PSO 2** To provide thorough knowledge of laboratory skills so that students can prepare for the experimental setup, actual working of equipments, obtain experimental data and interpretation of it. This then interpreted using theoretical principles. **PSO 3** To make the students self sufficient in understanding and handling the various issues that may arise related to chemistry.

		well conversant with various pollutants their sources and their impact on bio-system. So they become well versed with protection and conservation of environment. **PO7 SELF DIRECTED AND LIFE LONG LEARNING** Program curriculum inculcates the curiosity and problem solving approach which makes them self directed and learning becomes a continuous process throughout the life.	

Courses Offered:– Under Graduate: Chemistry

Sr. No	Class	Course	Course Outcomes
1	F.Y.B.Sc. Chemistry (Annual Pattern)	Paper I Physical & Inorganic Chemistry	This course enables students to understand basic laws regarding states of matter, surface chemistry, thermodynamics and structure of atom. Students are also made awarw of mole concept, derivations, depictions and problem solving and periodic properties of the elements including the preliminary theories of bonding.
		Paper II Organic & Inorganic Chemistry	Students are made aware of fundamental concepts of organic and inorganic chemistry which governs the structure, bonding, properties, structural effects, acid-base theories, preparation methods, reactivity and stereochemistry of organic molecules.
		Paper III Practical chemistry	Chemistry is an experimental subject; practical course is intended to achieve the basic skills required for understanding the concepts and authenticating the basic laws and principles of chemistry &helps in development of practical skills of the students.
2	S.Y.B.Sc. Chemistry (Semester Pattern) Semester-I	Physical & Analytical Chemistry (CH-211)	Students are made aware about kinetics of chemical reactions, photochemical laws, distribution law and extraction process. Students are introduced to analytical chemistry in which they are made aware of inorganic qualitative analysis and analysis of organic compounds (Qualitative & Quantitative). Along with it, they also study error in quantitative analysis & ways to minimize them.
		Organic & Inorganic Chemistry (CH-212)	Students are made aware of stereochemistry of different stereoisomers & organic reaction mechanism in which they study different types of reagents, reactions and their mechanisms. Students are introduced to metallurgy to understand chemical reactions and processes occurred in metallurgy. The corrosion & passivity is also included in the syllabus.
	Semester II	Physical & Analytical	Students are made aware about concepts of Helmholtz free energy & Gibbs free energy as well as free energy of

		Chemistry (CH-221)	chemical reactions & physical transformation. Students also study different modes of concentration, distillation of solutions of liquid in liquid, partially immiscible liquids& distillation of immiscible liquids. Students are made to understand volumetric analysis wherein they study non-instrumental volumetric analysis which comprises of study of various titrations, indicators used in it& some theoretical aspects related with titrations.
		Organic & Inorganic Chemistry (CH-222)	Students are introduced to various biomolecules, their role & structural aspects. Students also study different oxidizing and reducing reagents, their selectivity to different substrates, heterocycles, their preparation & reactions. Students are introduced to organometallic chemistry & use of organometallic compounds in synthesis of organic as well as inorganic compounds. They also study chemical toxicology to know adverse effects of chemicals.
	S. Y. B.Sc. Chemistry (Annual Pattern)	Practical course in Chemistry (CH-223)	Students are trained to determine the rate constant of chemical reactions, heat of solution , heat of neutralization, critical solution temperature of partially miscible system & distribution coefficient. Students are trained for quantitative analysis of different samples such as Na_2CO_3 in washing soda, Aspirin in APC tablet, Aluminium in Alum, strength of H_2O_2, Copper in Brass & iodimetric methods. Students are trained for organic & inorganic qualitative analysis. They are also trained for preparation of organic compounds & chromatographic techniques like TLC.
3	T. Y. B.Sc. Chemistry (Semester Pattern) Semester-III	CH-331 Physical Chemistry	Students are introduced basic concept of physical chemistry. They also learn methods to determine order of reaction, Arrhenius equation, and graphical evaluation of energy of activation. Students learn principle and applications of rotational, vibrational, raman and electronic spectroscopy. Students will get familiar with phase rule, phase diagram of one and two component systems.
		CH-332 Inorganic Chemistry	Students are made aware of the principles of various theories of bonding like Sidgwick model, Werner's theory VBT,CFT, MOT. They are also made aware of the principles of isomerism, nomenclature and structures of inorganic complexes.
		CH 333 Organic Chemistry	It is the basic course in organic chemistry. Students are introduced with concepts like acidity, basicity of organic molecules, electrophile, nucleophile and good and bad leaving groups. Students are introduced with stereochemistry of disubstituted cyclohexane. Students are able to understand mechanism of organic reaction. Arrow drawing concept which is important part of reaction mechanism is explained thoroughly in this course. Students are able to identify different types of organic reactions and also they can understand reactivity profile of organic molecules.
		CH 334 Analytical Chemistry	Students are made aware of quantitative chemical analysis using the techniques like gravimetry, polarography, AAS, FES and spectrophotometry at the levels of macro, micro and trace analysis of metals and non-metals from industrial and natural samples.

		CH-335 Industrial Chemistry	This course enables the students to learn use of agrochemicals like pesticide, insecticides, fungicides, fertilizers and their environmental impact. Study of food industry makes them aware of food adulteration, storage and processing of food. This course also provides opportunity to study agrochemicals, food chemicals on industrial scale. Students also learn manufacturing of basic chemicals such as Ammonia, Sulphuric acid and Nitric acid. Syllabus further comprises study of petrochemicals and eco- friendly fuels, where in students study processing of petrochemical fuels, properties of fuels and applications of fuels,non conventional energy. Syllabus also includes study of cement and glass industry. Properties, manufacture and applications of different types of cement and glass.
		CH-336 (E) Biochemistry	Students are introduced to the properties and character of fundamental components of living organism such as proteins, carbohydrates, lipids, vitamins and hormones. Students are expected to get familiarize with cell types, cell organelles and various techniques used in biochemical studies.
	T. Y. B. Sc. Chemistry Semester-IV	CH-341 Physical Chemistry	The course aims to give fundamental understanding and applications of electrochemical Cells, Nuclear Chemistry, Crystal structure and Quantum Chemistry. Students get to know thermodynamics and EMF, Chemical cell with and without transfer, application of EMF measurement such as pH determination, determination of solubility and solubility product. Basic elements of quantum chemistry are also introduced.
		CH- 342 Inorganic Chemistry	Students are made aware of chemistry of f block elements principles and applications of catalysis, organomettalic chemistry and the principles and the applications of metals, semiconductors and superconductors.
		CH -343 Organic Chemistry	Students are introduced with carbanions and their reactions. Retrosynthetic analysis concepts are explained to students. Rearrangement reactions are introduced with mechanistic approach. Spectroscopic techniques like PMR, U.V. and I.R. are introduced. Students learned to differentiate organic compounds with the help of these spectroscopic techniques.
		CH 344 Analytical Chemistry	The students are trained in the technique of separation, identification of purification using chromatographic techniques like TLC, GC, HPLC, electrophoresis etc . This knowledge enables them to be good analytical of Quality control chemist in various fields.
		CH-345 Industrial Chemistry	Students are expected to learn properties, ways to manufacture or process and application of different types of polymer, paints, pigments, dyes, soaps, detergents and cosmetics. Students also learn theoretical aspects of manufacturing of sugar and fermentation industry. Syllabus further includes study of Pharmaceutical industry where students are introduced to general aspects of drug action, manufacturing of some drugs and its usage and lastly there is topic which discusses problems caused by industry such as pollution and generation of waste and what are the ways which can prevent or minimize it.

		CH-346 (E) Dairy Chemistry	Students need to know the significant metabolic pathways necessary for the sustenance of life. Fundamental processes associated with central dogma of molecular biology are taught. Students get acquainted with applications of genetic engineering in various fields like agriculture, industries and medicine.
	T. Y. B.Sc. Practical Chemistry (Annual)	CH- 347 Physical Chemistry Practicals	Students are trained in the techniques such as pH metry, Conductometry, Potentiometry, Colorimetry, Spectrophotometry, Refractometry and G. M. Counter. They learn to use these techniques in order to understand various chemical reactions.
		CH- 348 Inorganic Chemistry Practicals	Students are trained in the IQA of different mixtures of inorganic compounds, and the separation of the metal ions using chromatographic techniques and inorganic quantitative analysis using the techniques of gravimetry, volumetry, colorimetry
		CH-349 Organic Chemistry Practicals	Chemistry is an experimental subject; practical course is proposed to achieve the basic skills required for understanding the reactivity of organic molecules and validating the basic principles. It helps in development of practical skills of the students & understanding the importance of chemical safety and also explains the factors affecting reaction outcomes and yields.

Programmes offered – Post Graduate in Organic Chemistry

Sr. no	Program	Program objectives	Program specific objectives
1	M Sc. Organic Chemistry	**PO1. CRITICAL THINKING** It is intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing or evaluating information gathered from or generated by observations, experience, reflection, reasoning or communication as a guide to belief and action. The students of chemistry are progressively trained along these lines. **PO2. EFFECTIVE COMMUNICATION** It is two ways information sharing process which involves successfully delivering the intended message	**PSO1** To develop the post graduate department on the modern lines of education and training levels. **PSO2** To impart the advanced practical and theoretical knowledge to the students and develop the scientific skills among them to be useful in the

		well receives by other party. Thus the students can deliver their knowledge of chemistry to the society using English or relevant language. **PO3 SOCIAL INTERACTIONS** In this post-graduate course students are made aware of environment related topics like drugs fertilizers, industrial chemicals etc. They are made aware of optimal use of these substances and are expected to spread these knowledge in the society. **P04 EFFECTIVE CITIZENSHIP** In this program students are made aware of pollution problems waste water management, water treatment etc. They are also made aware importance of energy and water, food, fuels, general hygiene and cleanliness etc. **PO5 ETHICS** It includes practice of moral principles that govern the person's behavior or the conducting an activity. During the teaching of this course properties of various chemicals (old and newly synthesized) are discussed and also their beneficial and/or adverse effects on the human race/living world are also discussed. **PO6 ENVIRNMENT AND SUSTAINABILITY** It is state in which the demands placed in environment can be made without reducing its capacity to all the people to leave well now in future. In post graduate teaching a special course entitled Green Chemistry which especially stresses these issues considering the environmentally friendly processes and products is discussed with the students. **PO7 SELF DIRECTED AND LIFE LONG LEARNING** Program curriculum inculcates the curiosity, critical thinking and problem solving approach so as to reach the rational conclusions among the students making them self directed and thus learning becomes a continuous process throughout their life.	concerned field. PSO3 To trained students and make them eligible for accessing integrated multidimensional fields. POS4 Anticipation of new/upcoming areas in academics as well as in technology.

Courses offered –Post graduate Chemistry

Sr. No.	Class	Course	Course Outcomes
1	M.Sc. I (Organic Chemistry) Semester- I	CHP-110 Fundamentals of Physical Chemistry I	The course aims to provide fundamental understanding of physical chemistry, students learn the concept of Gibbs and Helmholtz energies, Chemical potential, Expressing Chemical equilibrium in terms of chemical potential. Elements of quantum chemistry, wave particle duality, uncertainty principle, wave function and its interpretation, well behaved functions, orthonormal functions, Schrodinger equation, particle in a box, degeneracy, quantum mechanical harmonic oscillator and quantum tunneling are introduced. Students are made aware of Chemical kinetics and reaction dynamics topics such as Reversible reactions, principle of microscopic reversibility, steady state approximation, elucidating mechanism using SSA. Arrhenius theory, enzyme catalysis and Michaelis-Menten mechanism.
		CHI-130 Molecular Symmetry & Chemistry of s & p block elements	Students are made to understand the symmetry and group theory and use this knowledge to interpret the properties like dipole moment, optical activity, and signals in IR and Raman spectroscopy for structure identification. Students are also made to understand the periodic trends in properties of S and P block elements and their applications in fields like catalysis, industry, human metabolism and medicines etc.
		CHO-150 Basic Organic Chemistry	This is a primary course for both organic & Drug Chemistry students. This course is designed to make students aware of basic oraganic chemistry, including reaction mechanism, how to write structures of organic molecules more realistically, Stereochemistry of carbon compounds etc. The main intention of this course is to make the students perfect for mechanisms of some basic organic reactions.
		CHA-190 Safety in Chemical Laboratory and Good Laboratory Practices	This course is aimed at providing student necessary guidelines of Safety in Chemical Laboratory and Good Laboratory Practices. Students get acquainted with different types of hazards at workplace, use of personal protective and other safety equipments, types of fire extinguishers & method of use, Inventory Management, Storage and Disposal and importance and principle of Good Laboratory Practices (GLP).
	M.Sc. I (Organic Chemistry) Semester- II	CHP-210 Fundamentals of Physical Chemistry II	The course aims to provide understanding of physical chemistry, In this course fundamentals of molecular spectroscopy are introduced. Students learn basic elements of rotational, vibrational, raman and electronic spectroscopy. Nuclear and radiation Chemistry concepts are introduced. Students get familiar with Chemical Bonding **:** Valence Bond theory, hybrid orbitals, geometry and hybridization, Molecular Orbital Theory, linear variation method, Approximations underlying Huckel theory, bond order, Aromaticity, Applications of Huckel theory.
		CH- 230	Students are made aware of spectral and magnetic

		Coordination and Bioinorganic Chemistry	properties of d and f block elements and spectrophotometric analysis of metals like Cr, Mn, Ni and magnetic behavior of various complexes of f block elements in MRI and as TV phosphors. Students are also made aware of a role of metal ion in biologically active compounds like Hb, Mb cytochromes and use of anticancer drugs i.e. platinum complexes.
		CH-250 Synthetic Organic Chemistry & Spectroscopy	The first section of this course is aimed to make students familiar with various basic organic reactions with different examples along with their mechanism. The second sections deals with basic introduction to various Spectroscopic methods like UV, IR. ^{1}H, ^{13}C-NMR and Mass Spectrometry and their application in structure determination of various organic molecules.
		CH-290 Basic Biochemistry	Understanding the importance and properties of biomolecules like proteins, carbohydrates, lipids, nucleic acid etc. Students get familiarized with cell types, cell organelles, biomembrane for drug transport and fundamental processes like replication, transcription and translation. Students learn the scope of biochemistry subject in pharmaceutical sciences
	M.Sc. I (Organic Chemistry) Practical (Annual)	CHP-107 Physical Chemistry Practical	Students are trained to use the techniques such as pH metry, Conductometry, Potentiometry, Colorimetry, Spectrophotometry, Refractometry and G. M. Counter. These techniques will enable them to work as quality control chemist in various labs and such organizations.
		CHI-127 Inorganic Chemistry Practical	Students are trained for the preparation of various solutions, synthesis of various inorganic complexes and their characterization. The students are trained for handling of natural materials and their quantitative analysis which involves disintegration, separation and individual estimations. They are trained to handle various equipments like spectrophotometer, flame photometer, conductometer etc.
		CHO-247 Organic Chemistry Practical	Students are trained to different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction. Students are made aware of safety techniques and handling of chemicals. Students are made aware of carrying out different types of reactions and their workup methods.
	M.Sc. II (Organic Chemistry) Semester III	CHO-350 Organic Reaction Mechanism	This course enables the students to learn the mechanistic aspects or organic reactions in details. This involves use of recent reagents, catalysts and their experimental set up to carry out reactions on industrial scale. In order to find the detailed mechanism, study of this course gives idea about the use of different techniques like radio labeling, isolation of intermediates and trapping of intermediates and pulse radiolysis. This helps to understand the paths of organic reactions in better way.

		CHO-351 Spectroscopic methods in Structure determination	This course gives an idea about the basic understanding of Spectroscopic methods like ^{1}H, ^{13}C- NMR, 2D NMR Techniques and Mass Spectrometry. The students understand the basic theory of NMR, Mass Spectrometry and also advance NMR techniques like 2D NMR. They also learn how to apply these analytical methods in structure determination of either known organic molecules or new chemical molecules.
		CHO-352 Organic Stereochemistry	This course is framed mainly for stereochemistry cyclic compounds, their stability & reactions. This course will be really helpful to students to understand stereochemistry of organic chemistry and to think about new stereoselective reactions as far as the asymmetric synthetic part is concerned. This course also includes resolution of racemic modification and stereochemistry using spectroscopic method viz. PMR. Which will be helpful for in their future to predict the stereochemistry usind PMR like method.
		CH-353 Pericyclic Reactions Photochemistry & Heterocyclic Chemistry	The course aims to giving a fundamental theoretical understanding of heterocyclic chemistry, including alternative general methods for ring synthesis and application of such methods for the preparation of specific groups of heterocyclic systems. This course also includes pericyclic and photochemical reactions along with reactive intermediates. Students are made aware of different types of pericyclic reactions like electrocyclisation, cycloaddition, sigmatropic, chelotropic and group transfer. Molecular orbital theory , PMO and FMO theory are thoroughly discussed. Principles of photochemical reaction, photochemistry of carbonyl compounds are thoroughly discussed.
	M.Sc. II (Organic Chemistry) Semester IV	CHO-450 Chemistry of Natural products	Post graduate students are taught to understand chemistry of natural products. In this course they learn how nature uses various pathways to synthesize large number of primary and secondary metabolites though the process of biogenesis. Following the same idea, that helps the chemists to plan synthetic strategies to prepare those pharmaceutically important compounds in laboratory. Part of this course involves multistep laboratory synthesis of some of the important secondary metabolites.
		CHO-451 Advanced Synthetic Organic Chemistry	This course is specially designed for some advanced organic reactions viz. coupling reactions, multicomponent reactions, domino reactions, olefination reactions etc. This also includes designing organic synthesis using retrosynthetic method which will help students to plan the synthesis of new organic molecules.
		CHO-452: Carbohydrate and Chiron approach, Chiral Drugs and Medicinal Chemistry	In this course students are introduced to drugs, their chemical & biological properties, mode of action and discovery. They also learn drug targets, antimicrobial, anticancer drugs, antibiotics, antifugals, antivirals drugs etc. They are also itroduced to gastrointestinal & CNS disorders and their treatments. This course also includes QSAR which will be helpful for designing & developing drugs.

		CHO-453: Designing Organic Synthesis and Asymmetric Synthesis	This course is designed to make students aware of supramolecular chemistry which includes bonding other than covalent boding like dipole dipole, pi-pi, ion-pi interactins etc. This also includes how such forces makes
	M.Sc. –II (Organic Chemistry) Practical (Annual)	CHO-347 Single stage preparations	This is a practical course of organic chemistry including one stage preparations of organic compounds also synthesis of some heterocycles. As per the objective this course is helpful to students to develop their skills in organic chemistry laboratory.
		CHO-447 Two stage Preparations	This gives hands on experience to students about the various organic transformations in laboratory. This involves preparations of organic compounds through single, double and multistep synthesis. They get training to set up new reactions, follow-up of progress of reaction by techniques like TLC, MP/BP and workup of reactions to purify desired products. Microscale preparations also help the students to improve upon their practical skills and reduce environmental pollution.
		CHO-448 Practical (Green Chemistry)	This practical course is designed to make student aware of green chemistry and role of green chemistry in pollution reduction. Here student learns how to avoid solvents and do solvent free reaction. Also the work-up procedure in many experiments is made more eco-friendly to environment.

Department : Electronic Science

Program Outcomes (PO) :

At the end of the program, the graduates fromB.Sc. of the Electronic Science department will be able to

PO 1 - Engineering Knowledge: Apply knowledge of mathematics, science , and Electronics for solving engineering problems and modeling.

PO 2 - Problem analysis: Design and conduct experiments as well as to analyze and interpret experimental or collected data, simulate and fabricate electronic circuits and systems and make own projects utilizing latest software tools and techniques. They also possess the ability to identify, formulate, research literature and analyze complex engineering problems to reach logical conclusions.

PO 3 - Design / development of solutions: Design a system, component or process to meet the desired specifications, performance and capabilities; compatible with health, safety, legal, societal and environmental considerations.

PO 4 - Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments in analyzing and interpreting data, and synthesizes the data to come to valid conclusion.

PO 5 - Modern tool usage: Apply appropriate techniques, resources and modern attitudes, IT tools (linking hardware and software) including prediction and modeling to complex electronic Science activities and research.

PO 6 - Engineer and Society: Understand the special duty they we to protect the public's health, safety and welfare by virtue of their professional status as engineers in society.

PO 7 - Environment and sustainability: Understand and correctly interpret the impact of engineering solutions in global, societal and environmental contexts and demonstrate the knowledge of a need for sustainable development.

PO 8 - Ethics: Understand ethics of life and professions and abide by them.

PO 9 - Individual and Team-work: PO 1 Articulate teamwork principles, work with a multi-disciplinary team, and appreciate the role of aleader, leadership principles, and attitudes conducive to effective professional practice of Electronics and Communication Engineering.

PO 10 - Communication: Communicate and present effectively both orally and in writing, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO 11 - Project management and finance: Demonstrate knowledge and understanding of the engineering finance and management principles as a member and leader in a team to manage projects in multi-disciplinary environments.

PO 12 - Life-long learning: Engage in life-long learning, demonstrate knowledge and understanding of contemporary and emerging issues relevant to their domain - demonstrate knowledge and understanding of business practices and principles of management and

understand their limitations, develop awareness of legal consequences of engineering solution.

Program Specific Outcomes (PSOs) of the Electronic Science Department :

The graduates of the department will attain:

PSO1: The ability to absorb and apply fundamental knowledge of core Electronics subjects in the analysis, design, and development of various types of integrated electronic systems as well as to interpret and synthesize the experimental data leading to valid conclusions.

PSO2: Competence in using electronic modern IT tools (both software and hardware) for the design and analysis of complex electronic systems in furtherance to research activities.

PSO3: Excellent adaptability to changing work environment, good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities.

Course Outcomes(CO) :

1B.Sc. I-Principle of Analog Electronics

A) Objectives:

1. To Understand electronic systems with a continuously variable signal
2. To Understand proportional relationship between a signal and a voltage or current that represents the signal.
3. To learn function of basic component's use in linear circuits.
4. To Understand component symbol, working principle, classification and specification.
5. To learn different theorems for simplification of basic linear electronics circuits.

B) Outcomes:

1. Understand Basic Circuits using Active Devices
2. Learn function of basic circuit components used in linear circuits.
3. Understand basic construction, equivalent circuits and characteristics of basic electronics devices.
4. Students understand basic linear electronics circuits and their working principle,

2B.Sc. I-Principle of Digital Electronics

A)Objectives:

1. To Understand basic digital electronic systems.
2. To learn function of basic digital circuits and use of transistors to create logic gates in order to perform Boolean logic.
3. To learn different theorems for simplification of basic Digital electronics circuits.
4. Student understand symbols, Truth tables, Boolean equations, & working principle

B) Outcomes:

1. Understand combinational and logical digital circuits and their differences.
2. Students will be introduced to Flip-flop, shifts register, counters and Semiconductor memory for data Processing circuits.
3. learn symbol, working principle of basic Digital electronics circuits for data processing application.
4. At the end of this course, students should be able to recognize and analyze the basic digital circuits.

3B.Sc. II-Analog Circuits Design

A)Objectives:

1. To study basic principles of amplifiers and oscillators.
2. To understand the working of various analog circuits.
3. To develop analog circuit design skills.
4. To apply the knowledge of analog circuits in different applications.

B)Outcomes:

1. understand Basic Analog Circuits and their applications using Active Devices
2. learn basic function of single stage amplifier, multistage amplifier and power Amplifier and their working principle.
3. understand basic construction of feedback circuits and their application in Oscillators.
4. understand basic amplifier and oscillator circuits and their application in analog circuits.

4B.Sc. II-Digital Circuits Design

A)Objectives:

1. To utilize k-maps in the design of combinational circuits.
2. To understand the design principles of sequential circuits.
3. To study the design and working of various data converters.
4. To configure the digital circuits in system interfacing and applications.

B)Outcomes:

1.Students will continue use of concepts covered in Digital Fundamentals.
2.will be able to analyze, design, build, and troubleshoot a broad range of Sequential circuits using digital ICs.
3.will be able to analyze, design, build, and troubleshoot a broad range of combinational circuits using digital ICs.
4. will be able to use the computer for modeling digital circuits.
8. will demonstrate understanding of the basics of programmable logic devices and implement circuits on them.

5B.Sc. III-Advanced Digital System Design

A)Objectives:

1. To study the principles required for designing of advanced digital systems.
2. To acquire basic knowledge of Hardware Description Languages (HDL).
3. To know designing of combinational and sequential logic circuits using VHDL.

B) Outcome:

1. Design advanced digital systems.
2. Understand the Hardware Description Languages (HDL).
3. Design combinational and sequential logic circuits using VHDL.

6B.Sc. III-Microcontroller 8051

A)Objectives:

1. To learn the architecture of 8051 microcontroller.
2. To learn the programming of 8 bit microcontroller

B) Outcomes:

1. Ability to differentiate microprocessor and microcontroller.
2. Describe the architecture of 8051

3. Able to write assembly language program for 8 bit microcontroller

7B.Sc. III-Analog Circuit Design and Applications of Linear Ic

A)Objectives:

1. To study the practical design aspects while using Opamps
2. To study the basic application circuits of Opamps
3. To Learn the specifications and selection criterion for linear ICs
4. To obtain information about different special purpose ICs and their applications
5. To refer and understand data manuals.

A)Outcomes:

1. understand Basic differential amplifier and their applications in linear Integrated circuits
2. learn basic function of operational amplifier, Ideal and practical characteristics and their mathematical application.
3. understand basic construction of active filters ,comparators and their application in electronics.
4. Students understand different types of multivibrator and wave form generator using IC 555.

8B.Sc. III-Principles of Semiconductor Devices

A)Objectives:

1. To enrich the understanding of fundamentals of semiconductor devices.
2. To have an awareness of IC fabrication techniques.

B)Outcomes:

1. Understand the fundamental concept of semiconductor like crystal structure, energy band gap, charge carrier statistics.
2. Understand the physics, basic characteristics and operation of semiconductor devices such as p-n junctions and Zener diodes
3. Have knowledge of fabrication technology for semiconductor devices and integrated circuits.

9B.Sc. III-'C' Programming

A)Objectives:

1. To learn the basics of "C" programming language
2. Development of programming skill to write simple "C" programs.

B)Outcomes:

1. Understand basic of the programming language.
2. Able to switch any other programming language.
3. Able to write C program for simple real life applications using structures.

9B.Sc. III-Fiber Optic Communication

A)Objectives:

1. To understand the principles of fiber optic communication system.
2. To learn measure different parameter of optical fibers.
3. To understand essential optical components of Fiber Optic Communication.
4. To study the applications of fiber optic communication systems.

B) Outcomes:

1. Recognize and classify the structures of Optical fiber and types.
2. Discuss the channel impairments like losses and dispersion.
3. Analyze various coupling losses.
4. Classify the Optical sources and detectors and to discuss their principle.
5. Familiar with Design considerations of fiber optic systems.
6. To perform characteristics of optical fiber, sources and detectors, design as well as conduct experiments in software and hardware, analyze the results to provide valid conclusions.

Department of Mathematics

Program outcomes, program specific outcomes and course outcomes:

Sr.No.	Program	Program Objectives	Program Specific Outcomes
1	B.Sc Mathematics	PO1: Understanding Concepts PO2: Promotion of thinking PO3: Problem Solving PO4: Confidence PO5: Promotion of self-study PO6: Development of Writing and Listening Skills	PSO1: To enable the students to study mathematics for themselves. PSO2: To enable the students to quantify their experiences in other subjects they study. PSO3: To provide high quality mathematical education at all levels that will be vital for scientific and technological developments. PSO4: To enable the students to cultivate a mathematical way of thinking.

Courses offered:

Sr.No.	Course	Course Outcomes
1	F.Y.B.Sc. -Algebra and Geometry	On completion of this course students will be expected to • Solve results involving divisibility and greatest common divisors; • Solve systems of linear equations • Apply Euler-Fermat's Theorem to prove relations involving prime numbers; • Polynomial addition, subtraction, division, multiplication, roots of polynomials. • Transformation, translation and reflection; • To find nature of general conics. • Find equation of spheres, cylinders and cones

2	F.Y.B.Sc.- Calculus and Differential Equations	On completion of this course students will be expected to • Prove simple identities and inequalities • Be able to calculate limits • Be able to calculate limits at infinity • Be able to discuss the continuity • Be able to calculate limits in indeterminate forms by a repeated use of l'Hˆopital's rule • Be able to use derivatives to find intervals on which the given function is increasing or ecreasing

		• Understand the concept of indefinite integral • Understand the concept of Differential Equation • Be able to use Differential Equation to find Orthogonal Trajectories.
3	S.Y.B.Sc. (SemI) Multivariable Calculus I	Upon successful completion of Multivariable Calculus the student will be able to: • Compute the dot product of vectors, lengths of vectors, and angles between vectors • Compute the cross product of vectors • Determine the equations of lines and planes using vectors • Sketch various types of surfaces • Define vector functions of one real variable and sketch space curves • Compute derivatives and integrals of vector functions • Find the arc lengths and curvatures of space curves • Find the velocity and acceleration of a particle moving along a space curve • Define functions of several variables and their limits • Calculate the partial derivatives of functions of several variables • Apply the chain rule for functions of several variables • Calculate the gradients and directional derivatives of functions of several variables • Solve problems involving tangent planes and normal lines • Determine the extrema of functions of several variables • Use the Lagrange multiplier method to find extrema of functions with constrains.
4	S.Y.B.Sc. (SemI) Laplace Transform and Fourier Series	On completion of this unit successful students will: • Able to understand the Laplace transform of elementary functions. • Able to use the rules of integration & definition of Laplace transform students to prove the properties of Laplace transform.

		• Learns the topics inverse Laplace transform, application of Laplace transform helps to solve linear higher order differential equation , system of differential equations. • Understand the concept of fourier Series which gives the idea of expanding the sectionally continuous functions in to infinite series.
5	S.Y.B.Sc. (SemII) Linear Algebra	On successful completion of this course unit students will be able to • Understand the basic ideas of vector algebra: linear dependence and independence and spanning; • Know how to find the row space, column space and null space of a matrix, and be familiar with the concepts of dimension of a subspace and the rank and nullity of a matrix, and to understand the relationship of these concepts to associated systems of linear equations; • Be familiar with the notion of a linear transformation and its matrix; • Find the Gram-Schmidt orthogonalization of a matrix.
6	S.Y.B.Sc. (SemII) Numerical methods and its Applications	On successful completion of this course unit students will be able to • Find errors • To rounding off numbers n significant digits, to n decimal places. • To find Solution of Algebraic and Transcendental Equations. • Use Interpolation to fit tabular data in algebraic equation. • Fit straight line, second degree polynomial from tabular data. • Find area under the curve by using Numerical Integration. • Find solution of first order ordinary differential equations.

Department of Botany
Programs offered

Sr. No.	Program	Program Objectives	Program Specific Objectives
1	**B.Sc. Botany**	**1.Critical Thinking**: The curriculum made for the betterment of the students, enhance the ability and thinking power. **2. Effective Communication:** The complete medium of program is in English so students will communicate in the same. **3.Social Interaction**: Due to continuous field visits in the interior regions students interact with the social activities for their study. **4.Effective Citizenship:** Being the botanist students have to communicate with many people, they become more familier as well as interactive **5.Ethics**: The subject teach students about the ethical approach, not to cut the plants. **6.Environmentand Sustainability**: conservation practices are studied for sustainable development **7.Self-directed and Life-long Learning**: each and every aspect of the module teaches life long learning	**1.To provide thorough knowledge about various plant groups from primitive to highly evolved.** **2.To make the students aware of applications of different plants in various industries.** **3.To highlight the potential of these studies to become an enterpruner** a. **To equippe the students with skills related to laboratory as well as field based studies** b. **To make the students aware about conservation and sustainable use of plants** c. **To creat foundation for further studies in Botany** d. **To address the socio-economical challenges related to plant sciences** e. **To facilitate students for taking up and shaping a successful career in Botany**

2	**Ph. D. Botany**	**Providing an excellent and high class post graduate education with innovative and front line research as par the national and international standards and adding realvalues to the social, environmental, and corporate sectors development**	• **It implies exercising imagination and constantly seeking out originality. It comes from developing a sense of curiosity and courage to questions the status-quo.** • **It aims at exploring and following methods of doing things is a different way for betterment and improvement in solutions to problems. It involves questioning pre-conceived ideas, discovering and / or making something not already there.** • **Indeed, it is a divine attribute; but human beings are also gifted to be creative.**

Courses offered- Under graduate Botany

Sr. No.	Class	Course	Course Outcomes
1	**F. Y. B. Sc Botany (Annual Pattern)**	**BO111: Plant Diversity, Plant Morphology and Anatomy**	**To provide thorough knowledge about various primitive plant groups.**
		BO112: Industrial Botany	**To make the students aware of applications of different plants in various industries** **To highlight the potential of these studies to become an entrepreneur**
		Practical	**To get acquainted with the subject in live form and visits to industries**
2	**S. Y. B. Sc Botany Semester I**	**BO211: Taxonomy of Angiosperms and Plant community**	**To provide thorough knowledge about various highly evolved plant groups and their community structure**
		BO212:Plant Physiology	**To study the different metabolic process for synthesis of food material**

	S. Y. B. Sc Botany Semester II	**BO221: Plant Anatomy and Embryology**	**Internal structure will be observed for further studies as well as to study the developmental pattern of plant**
		BO222: Plant Biotechnology	**To study the techniques of multiplication and nanotechniques**
		Practical based on theory course	**To equipped the students with skills related to laboratory as well as field based studies**
3	**T. Y. B. Sc. Botany Semester III**	**BO331 Cryptogamic Botany**	**Interpret the performance characteristics & life cycles of various lower plants**
		BO332 Cell and Molecular Biology	**To develop the mind from the cellular to molecular level.**
		BO333 Genetics and Evolution	**Analyze the evolution with genetical characteristics for future aspects**
		BO334 Spermatophyta and Palaeoboatny	**Evaluate the performance of various line of evolution with respect to live and fossil forms**
		BO335 Horticulture and Floriculture	**To develop the skills to become entrepreneurship for small scale startup**
		BO336 Computational Botany	**Apply optimization, numerical methods, statistical methods to solve problems**
	T. Y. B. Sc. Botany Semester IV	**BO341 Plant Physiology and Biochemistry**	**To study the different metabolic process for synthesis of food material in details**
		BO342 Plant Ecology and Biodiversity	**To make the students aware about conservation and sustainable use of plants**
		BO343 Plant Pathology	**Design different post-harvest methods to cope over diseases.**
		BO344 Medicinal and Economic	**To make the students aware about conservation and sustainable use of plants**

		Botany	
		BO345 Plant Biotechnology	**To study the techniques of multiplication and nanotechniques**
		BO346 Plant Breeding and Seed Technology	**Evaluate the performance of multiplication technique and seed storage technique**

DEPARTMENT OF ZOOLOGY

BACHELOR OF SCIENCE (B.Sc.)

Program Outcomes

Students taking admission to this program of B.Sc. are expected to get equipped with following outcomes:

- Explaining the basic scientific principles and methods.
- Inculcating scientific thinking and awareness among the student.
- Ability to communicate with others in regional language and in English.
- **Ability to handle** the unexpected situation by critically analyzing the problem.
- Understanding the **issues related to nature and environmental contexts** and sustainable development.
- Required the **skills** in handling scientific instruments, planning and performing in laboratory experiments.
- Imbibed **ethical, moral and social values i**n personal and social life leading to highly cultured and civilized personality.

Program Specific Outcomes: PSO of B.Sc., Zoology

- Demonstrated a broad understood of animal diversity including knowledge of the scientific classification and evolutionary relationships of major groups of animals.
- Recognized the relationships between structure and functions at different levels of biological organization (e.g., molecules, cells, organs, organisms, populations, and species) for the major group of animals.
- Characterized the biological, chemical, and physical features of environment (e.g., terrestrial fresh water, marine, host) that animals inhabit. Explained how animals function and interact with respect to biological, chemical and physiological processes in natural and impacted environments.
- Explained how organisms function at the level of the gene, genome, cell, tissue, organ and organ- system. Drawing upon this knowledge, they are able to give specific examples of the physiological adaptations, development, reproduction and behavior of different forms of life.
- Understood the applied biological sciences or economic Zoology such as Sericulture, Apiculture, Aquaculture, Pest and their control and medicine for their career opportunities.

Course Outcome (CO): ZOOLOGY

Course Outcome: Animal Systematic and Diversity

- Students come to knowing the basic concept of biosystematics and procedure in taxonomy.
- Identified the taxonomic status of the entire animal kingdom evolutionary model of the group.
- Described the general biology of few selected non – chordates and chordates useful to mankind.
- Understood about the comparative anatomy of animals.

Course Outcome: Mammalian Histology

- Understood about the tissues found in mammals.
- Understood the techniques of the histological preparations of the tissues.
- Could the understand; differentiate normal and affected tissues / cells.

Course Outcome: Biological Chemistry

- Students understood the macromolecules present in living cells, their types, structure and role.
- Various methods of detecting the molecules (sugars, lipids, amino acids) in the given sample.

Course Outcome: Environmental Biology and Toxicology

- Students understood about the environment, its components and their interrelationships.
- Also understood the factors changing / modifying the normal/natural environmental situations.
- Could understand about the importance of the healthy environment, wildlife, its conservation, conservation of natural resources and pollution control.
- Students understood the factors of toxicity, and its control.

Course Outcome: Parasitology.

- Students understood about the pathogens, pathogenecity, control measures
- Could get knowledge of epidemic disease.

Course Outcome: Cell Biology

- Understood about the types of cells.

- Ultrastructure and functions of various cell organelles in cell and ageing, cell division and cancerous cells.

Course Outcome: Biological Techniques

- Students could understand about various equipment their applications in biological studies.
- Students could understand about various techniques used in biological science to study – about the cell morphology, physiology, chemical composition using these techniques.

Course Outcome: Physiology of Mammals and Endocrinology

- Understood about the physiological processes that occur in the body (life processes) of mammals, and about the role of endocrine glands and the hormones on the animal physiology and growth.

Course Outcome: Genetics and Molecular Biology

- Students understood various laws of heredity.
- Also understood DNA / RNA / Protein – structure and their synthesis.
- About the genome, DNA fingerprinting, cloning etc…

Course Outcome: Public Health and Hygiene

- Students understood about the personal, social community and mental health.
- Understood the causes, and remedies on the various health issues, about diet, etc…
- Could understand about the role of UNESCO, WHO and various NGOs.

Bachelor Business Administration (Computer Application)

Program Objective (PO):

- BBA-(CA) previously known as B.C.A Bachelor of Computer Application is an under-graduate course of 3 years duration having 6 semesters. The course teaches the students about the basic concepts of programming languages and its applications with complementary knowledge related to management and accounting. This degree course is best option which encompasses the entry point for all streams students to make a career in computers.
- To provide sound academic base from which an advanced career in Computer Application can be developed.
- To conceptualize grounding in computer usage and its practical business application will be provided.
- To provide deep & update knowledge of computers to the students. Scope for Higher Studies after BBA-CA in Computer Application There are many higher studies options for those who have pursued BBA-(CA). Higher studies will help the students to get placed in better positions and will improve their remuneration. Some of those options are given below.
  • MCA in Computer Application
  • MCA in Computer Management
  • MCA in Computer Science
  • Master in Business Administration
  Career Opportunities after BBA-CA in Computer Application The candidates who have completes BBA-CA in Computer Application have many career opportunities in both private and public sector organizations. Various job types available for these graduates are listed below.

• Network Administrator

• Database Administrator

• Software Programmer

• Software Trainee

• Programmer

• Technical Support Associate

• System Analyst

• QA Tester

• Game Developer

• Application Developer

• Software Marketer

• Technical Architect

• Technical Analyst

• IT Consultant

• Web Application Developer

• Professor

• Systems Engineer

• Mainframe Systems Manager

• IT Manager

• Client-Server Systems Manager

• Software Tester

• Project Manager

• Healthcare Software

• Computer Systems Specialist Supervisor

Some of the organizations that recruit computer application graduates are IT Companies, Airport Authority of India, Banking sector, Indian Railways, Research organizations, Telecom Industry, Indian Space Research Organization, Defense Research and Development Organization, Combined

Defense Service, Union Public Service Commission, Bharat Sanchar Nigam Limited, Electronic Cooperation of India Limited, Steel Authority of India, etc. The aspirants interested in teaching are required to appear for the SET/NET exam. Those who qualify in the exam can apply for the lecturer post in various government/private colleges.

Bachelor Business Administration (Computer Application)

Program Specific Outcome: (PSO)

FYBBA(CA)

Subject Code	Subject Name	Subject Outcome
101	Business Communication	1) To understand what is the role of communication in personal and business world 2) To understand system and communication and their utility 3) To develop proficiency in how to write business letters and othe communications in required
102	Principles of Management	1) To understand basic concept regarding org. Business Administration 2) To examining how various management principles 3)To develop managerial skills among the students
103	C-Programming	1) To Understand how to use programming in day to day Applications 2) Improve the problem solving ability 3)Understand and develop well-structured programs using C language
104	Database Management Systems	1) To understand the file structure and its organization. 2) An introduction about Database management system 3) Helps student to learn different types of data models 4) Student gets knowledge about designing relational database
105	Business Statistics	1. To understand role and importance of statistics in various business situations 2. To develop skills related with basic statistical technique 3. Develop right understanding regarding regression, correlation and data interpretation

107	Principles of Programming and Algorithm-1	1) Students get the knowledge of developing algorithms which develops the logical ability of the students. 2) It is the basic requirement of programming as students learns basics of Algorithms, Flowcharts etc. 3) Students get job as a programmer in good organizations.
201	Organization Behavior & Human Resource Management OB & HRM	1) Helps the students to understand the impact that individual, group & structures have on their behavior within the organizations. 2) Enhance and apply the knowledge they have received for the betterment of the organization. 3) It helps students to understand different functions related to HRM & E-HRM 4) Helps to understand the Importance of HRM in different Organizations
202	Financial Accounting FA	1) Helps students to acquire sound knowledge of basic concepts of accounting 2) Gains basic accounting knowledge 3) Impart the knowledge about recording of transactions and preparation of final accounts 4) Acquaint the students about accounting software packages (Tally)
203	Object Oriented Concepts Through CPP	1)To learn basic object oriented concept 2)To write C++ programs that use object oriented concept such information hiding, constructors, destructors 3) To know Inheritance, Polymorphism and its implementation in programming 4)Basic understanding of Template and Exception handling
204	Relational database RD	1) Students get the knowledge of Relational Database concepts which is the basic requirements of every organization. 2) Students get job as a DBA in good organizations. 3) Students can go for certification too which helps to get good opportunities in their carrier.
205	Web Technology HTML-JS-CSS	1) Give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies. 2) Understand how to develop web based applications. 3) Students are able to develop a dynamic webpages.

207	Principles of Programming and Algorithm-2	2) It is the basic requirement of programming as students learns basics of Algorithms, Flowcharts etc. 3) Students get job as a programmer in good organizations.

SYBBA(CA)

301	Relational Database Management System	1) Students get the knowledge of Relational Database concepts which is the basic requirements of every organization. 2) Students get job as a DBA in good organizations. 3) Students can go for certification too which helps to get good opportunities in their carrier.
302	Data Structure using C	1) Students get the knowledge of Programming. 2) Students get job as a Programmer in organizations. 3) Data Structures using C subject is the basic requirements of every organization
303	Operating System Concepts	1)To know system programming 2) Helps to understand services provided by operating system 3)To know Scheduling concept and scheduling algorithm 4)Helps to understand deadlock detection, prevention, avoidance 5) To know memory management in operating systems
304	Business Mathematics	1) Students learned basics of fundamental math. 2) Studied business problems and conversion into business math. 3)Learned the concept of LPP and transportation problem 4)Studied matrices and determinants
305	Software Engineering	1) Graduates are knowledgeable of the ethics, professionalism, and cultural diversity in the work environment. 2) Graduates can prepare and publish the necessary documents required throughout the project lifecycle. 3) Graduates can effectively contribute to project discussions, presentations, and reviews. 4) Develops Problem solving Skills 5) Develops Team work ability.

401	Object Oriented Programming using C++	1)To learn basic object oriented concept 2)To write C++ programs that use object oriented concept such information hiding, constructors, destructors 3) To know Inheritance, Polymorphism and its implementation in programming 4)Basic understanding of Template and Exception handling
402	Programming in Visual Basic	1) Students learned about event driven programing 2)Studied about MDI forms and implementation in projects 3)Studied different active X controls 4)Studied Connectivity and data report in vb
403	Computer Networking	1) Students can get job as a Network Administrator in any organization. 2) This subject has wide scope in every MNC's as Networking is required everywhere.
404	Enterprise Resource Planning	1) Through ERP students studied how to work with ERP 2) How to handle database 3) Client and Server Connection and Architecture 4)Linkages of different Organizations
405	Human Resource Management	1) Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes. 2) Develop, implement, and evaluate employee orientation, training, and development programs. 3) It helps students to understand different functions related to HRM & E-HRM 4) Helps to understand the Importance of HRM in different Organizations

TYBBA (CA)

501	Java Programming	1) Student studied basic knowledge of java programming 2) Learned the concept of class and objects, and basic concept of abstraction, encapsulation, inheritance and polymorphism 3) Studied how to deal with the files 4) Learned the concept of Frame and related functions
502	Web Technologies	1) Give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies. 2) Understand how to develop web based applications. 3) Students are able to develop a dynamic webpages.
503	Dot Net Programming	1) It introduces visual programming and event driven programming practically 2)To know Architecture of ADO.Net 3)Helps student to understand object oriented programming in VB.NET 4)To enhance applications development skills of the students
504	Object Oriented Software Engineering	1) This subject helps students to get job as a Developer or Tester in software company. 2) Students will learn the concept of software engineering in object oriented approach. 3) This subject has wide scope in every MNC's.
601	Advanced Web Technology	1) Give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies. 2) Understand the concepts of XML and AJAX 3) Students are able to develop a dynamic webpages
602	Advance Java	1) Studied the detailed knowledge of Thread and Multithreading 2) Studied the basic concept of Java Database 3) Studied the concept of Servlet and web and how to deal with the client and server on web applications

603	Recent Trends in IT	1) This subject helps students to get knowledge of recent trends in Information Technology. 2) Students will learn the concept of Network Security, Cloud Computing etc, which helps students to get job as a developer or network administrator in companies.
604	Software Testing	1) One of the Imp. Phase of SDLC, Students can get job as a Tester in software company. 2) This subject has wide scope in every MNC's as Testing process is required from the starting of every project. 3) Manual and Automation Testing both covers here, students can go for Certifications also which helps to get better opportunities in MNC's.

BIOTECHNOLOGY

Course Outcomes Department of Biotechnology

Programs offered

Program Objectives

Program Specific Objectives

- PO1.Critical Thinking: The curriculum made for the betterment of the students, enhance the ability and thinking power.

- PO2. Effective Communication: the complete medium of program is in English so students will communicate in the same.

- PO3.Social Interaction: Due to continuous field visits in the interior regions students interact with the social activities for their study.

- PO4.Effective Citizenship: Being the botanist students have to communicate with many people, they become more familier as well as interactive

- PO5.Ethics: The subject teach students about the ethical approach, not to cut the plants.

- PO6.Environment and Sustainability: conservation practices are studied for sustainable Development

- PO7.Self-directed and Life- long Learning: each and every aspect of the module teaches life long learning

PSO

- PSO1: To introduce the concepts in various allied subjects
- PSO2:To enrich students' knowledge
- PSO3: To help the students to build interdisciplinary approach
- PSO4:To inculcate sense of scientific responsibilities and social and environment awareness
- PSO5: To help students build-up a progressive and successful career

BSc Biotechnology

- PO1.Critical Thinking: is to regulate, indorse, and conduct acquaintance regarding basic plant biology and fetch supremacy in the biological sciences.

- PO2. Effective Communication: Development & Strengthening of communication

- PO3.Social Interaction: Due to continuous field visits in the interior regions students interact with the social activities for their study.

- PO4.Effective Citizenship: To impart basic and applied knowledge to the undergraduates Students

- PO5.Ethics: The subject teach students about the ethical approach, not to cut the plants.

- PO6.Environment and Sustainability: conservation practices are studied for sustainable Development

- PO7.Self-directed and Life- long Learning:Integration of multidimensional field

PSO

- PSO1: To help the students to build interdisciplinary approach
- PSO2: To empower students to excel in various research fields of Life Sciences
- PSO3: To inculcate sense of scientific responsibilities and social and environment awareness
- PSO4:To understand role of biotechnology various fields for betterment of life

Courses offered-

- **B. Sc Biotechnology**

Class Course Outcomes

1. Biosciences Thorough knowledge about various

primitive plants & animals. Microbiology Inculcate knowledge of micro-biology

- **F. Y. B. Sc Biotechnology (Annual Pattern)**

Biophysics organisms,& their association with other organisms Gain information about different instruments used in laboratories Biochemistry Expansion of horizon about biomolecules and their role life. Quantitative Understand use of mathematics &methods statistics for analysis of biological data Computers Help in understanding use of computer.
applications in biology

- **S.Y B.Sc. Biotech Semester I**

1.Genetics &Immunology

Understanding phenotypic & Genotypic immunology relationship Cell biology Expansion of horizon of knowledge on

2.**cell structure & function Environmental biotechnology**

Building the awareness in students for controlling environment pollution & S. Y. B. Sc.
recycling of different types of wastes. Biotechnology Semester I

Practicals in cell and genetics

Procure hands on training on extraction Cell bio of different organelles, study of gene
Genetics &interaction & antigen-antibody Immunology interaction

Practicals in Environment biotech

Benefits to detect different pollutatns

- **S. Y. B. Sc. Biotechnology Semester II**

Molecular biology

Aids students to understand chemical biology
and molecular processes that occur in and between cells Scientific writing
Skill development in writing a research paper, review articles Animal-Plant development
Describe levels of organization of plant & animals Metabolic pathway
Developing insights of metabolic processes in cells Practicals in molecular biology
Expertise in extraction & analysis of genomic material

Practicals in developmental biology

Insights' of growth & development in plants & animals

Microbial biotechnology

Perception of microbial diversity and biotechnology
their potential for use Tissue culture Grasp knowledge animal and plant cells.

- **T. Y. B. Sc. Biotechnology Semester III**

tissues in-vitro Biodiversity Know the role of conservation, diversity
of species, genetics, community, and landscape in marine, freshwater, and terrestrial
habitats. Practicals in MBT
Identification of different types of food, Dairy product spoilages & causative
agents Practicals in Tissue culture
Culturing cells & tissues in-vitro& developing plantlets

- **T. Y. B. Sc. Biotechnology Semester IV**

Large scale manufacturing process

Understanding fermentation process manufacturing & production of industrially important products Recombinant DNA technology Awareness about genetic modifications & its application

Biophysical- biophysical techniques

Understanding principal & working of different techniques used in life sciences

Practicals in biophysical techniques

Learning applications of various techniques in life sciences

Practicals in LSMP

Preparation of industrially important products

Genetics engineering applications in medicine & agriculture Plant biotechnology

Learn techniques of manipulating plant genome for developing better varieties.