Rayat Shiksan Sanstha's

Mahatma Phule Mahavidyalaya Pimpri, Pune-17

POs, PSOs and Cos

Faculty of Arts

Department of English

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.

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. (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. (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 u8nderstanding of literature and language.

S.Y.B.A.-Compulsory English

Paper- Literary Landscapes

Sr. No	**Objectives**
1	To develop competence among the students for self-learning
2	To familiarize students with excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English
3	To develop students interest in reading literary pieces.
4	To expose them to native cultural experiences and situations in order to develop human values and social awareness.
5	To develop overall linguistic competence and communicative skills among the students

Sr. No	**Course Outcomes**
1	The Student becomes the self- learned
2	The Students become familiar with various forms of literature.
3	The Students become independent readers
4	he Students become familiar with human values and social awareness

S.Y.B.A.-Optional English G-II

Paper- Study of English Language and Literature

Sr. No	**Objectives**
1	To make students understand the literary merit, beauty and creative use of language.
2	To expose students to the basics of short story, one of the literary forms.
3	To introduce some advanced units of language.
4	To prepare students for detailed study of literature and language.
5	To develop integrated view about language and literature.

Sr. No	**Course Outcomes**
1	Students will learn artistic and innovative use of language through prescribed literary text
2	Students will be acquainted with basic concepts and issues in linguistics
3	They will learn sub-disciplines of linguistics.
4	Students will be able to response emotionally to the literary text and will be acquired literary sensibility.

S.Y.B.A.-Optional English S-I

Paper- Appreciating Drama

Sr. No	**Objectives**
1	To acquaint and familiarize the students with the terminology in Drama and Criticism (i.e. the terms used in Critical Analysis and Appreciation of Drama)
2	To encourage students to make a detailed study of a few sample masterpieces of English Drama from different parts of the world
3	To develop interest among the students to appreciate and analyze drama independently
4	To enhance students awareness in the aesthetics of Drama and to empower them to evaluate drama independently

Sr. No	**Course Outcomes**
1	Students understand the terminology in Drama and Criticism.
2	Students understand few sample masterpieces of English Drama from different parts of the world.

3	They develop their interest and analyze drama independently.
4	Students become aware in aesthetics of Drama.

S.Y.B.A.-Optional English S-II

Paper- Appreciating Poetry

Sr. No	**Objectives**
1	To acquaint and familiarize the students with the terminology in poetry criticism.
2	To encourage students to make a detailed study of a few sample masterpieces of English poetry
3	To enhance students awareness in the aesthetics of poetry and to empower them to read appreciate and critically evaluate the poetry indecently.

Sr. No	**Course Outcomes**
1	The students become familiar with the terminology in poetry
2	The students become studied some examples of poetry.
3	The Students become aware in the aesthetics of poetry and read independently.

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

Paper- Literary Pinnacles

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.

T.Y.B.A.- Optional English G-III

Paper- Advanced Study of English Language and Literature

Sr. No	**Objectives**
1	To expose students to some of the best samples of Indian English Poetry
2	To make students study how Indian English Poetry expresses the ethos and culture of India
3	To make them understand creative use of language
4	To introduce students with some advanced area of language study
5	To prepare students for understanding and detailed study of both language and literature

Sr. No	**Course Outcomes**
1	Students will come to know the major figures of Indian literature in English
2	Students will acquire sense of appreciation of literary text.
3	Students will develop human values and concerns through literary text
4	Literary and linguistic competence of students will be enhanced

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

Paper-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.

T.Y.B.A.- Special English S-IV

Paper- Introduction to Literary Criticism

Sr. No	**Objectives**
1	To introduce students to the basics of literary criticism
2	To make them aware of the nature and historical development of criticism
3	To make them familiar with the significant critical approaches and terms
4	To encourage students to interpret literary works in the light of the critical approaches
5	To develop aptitude for critical analysis

Sr. No	**Course Outcomes**
1	Students acquire the knowledge of basics of literary criticism.
2	They become aware of the nature and historical development of criticism.
3	They familiarize with the significant critical approaches and terms.
4	Students interpret literary works in the light of the critical approaches.

2	The students compare the use of language in various media.
3	The students acquire the skills of data and translate these data in different media.
4	The students become familiar with various career potion through mass media like translator
5	The students become familiar with the use of language in media.

Class: S.Y.B.Sc.- Optional English

Sr. No.	**Objectives**
1.	To introduce scientific facts and the philosophy of science through the study of literary pieces.
2.	To create awareness about using language according to the situation

3.	To help learners acquire the basic skills of effective speaking and writing.
4.	To reinforce the grammar in order to improve vocabulary and use of English language in real life situations.

Sr. No.	**Course Outcomes**
1.	Students become aware about the use of English language in literary texts and scientific writing.
2.	Students revise the background knowledge and concepts in grammar in order to improve the word power on which their effective use of English language is based.
3.	They understand the minute technical aspects which are necessary to make language use appropriate according to various real life situations.
4.	Students get exposure to make effective use of language in both oral and written forms.

Department of Geography

Programme Outcomes (POs)

The outcome of UG Course in Geography

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

Programme Outcomes (PO):

- **PO1:** Students develop a solid understanding of the concepts of “space," “place” and “region” and their importance in explaining world affairs.
- **PO2:** Students understand general demographic principles and their patterns at regional and global scales.
- **PO3:** Students able to locate on a map major physical features, cultural regions, and individual states and urban centers.
- **PO4:** Students understand global and regional patterns of cultural, political and economic institutions, and their effects on the preservation, use and exploitation of natural resources and landscapes.
- **PO5:** Demonstrating proficiency in using geographical research tools including spatial statistics, cartography, remote sensing, GIS and GPS.
- **PO6:** Identifying, interpreting and analyzing geographic problems and processes.
- **PO7:** Formulating a research methodology and executing a formal student-led research project.

Programme Specific Outcomes (PSO) – Geography

PSO1: Understand the interdisciplinary nature of Geography and to integrate the knowledge of other disciplines to a wide variety of Geographical problems.

PSO2: Understand the scope, Methodology and application of modern Geography.

PSO3: Study theoretical and practical concepts of instruments that are commonly used in most Geography field.

PSO4: Understand how Geography is useful to solve Social, Economic and environmental problems and issues facing our society.

PSO5: Students will demonstrate significant research and writing expertise resulting in a meaningful scholarly contribution.

PSO6: Develop the ability to communicate scientific information and research results in written and oral formats

PSO7: Students will be prepared for advanced-level careers in academia, with governmental research and educational organizations, or within the private sector.

Class: F.Y.B.Com. (Commercial Geography)	
Sr. No.	**Objectives**
1.	To make students of the commerce faculty aware of the correlations between Economic activities and Geographical factors.
2.	To acquaint the students the scope and content of Commercial Geography in relation to the spatial distribution of resources.
3.	To acquaint the students with the dynamic nature of Trade and Transport.
4.	To acquaint the students with the dynamic nature of Commercial Geography.
5.	To make students aware of the relationships between geographical factors and economic activities.
6.	To acquaint the students with various economic activities in Geographical environment.
7.	To acquaintthe students with the dynamic aspects of recourses and need for their conservation.
8.	To make the students aware about the role and dynamics of population in Commerce.
9.	To acquaint the students with the Industrial sector and the pollutant associated with it.
10.	To make students aware of the changing role of transport and communication in Trade and Transport.
11.	To make students aware of the role of tourism in development.

12.	To acquaintthe students with basic cartographic techniques.

Class: F.Y.B.Com. (Commercial Geography)	
Sr. No.	**Course Outcomes**
1.	Students define environment and human activities;
2.	Students understand thetypes of environment and human activities i.e. natural or physical environment and non-physical or cultural environment;
3.	Students can differentiate between natural and unnatural environment;
4.	Students understandthe effect of environment and geographical conditions on commercial activities;

Class: F.Y. B. A. Semester – I (Physical Geography)	
Sr. No.	**Objectives**
1.	To introduce the students to the basic concepts in Physical Geography.
2.	To introduce latest concepts in Physical Geography.
3.	To acquaint the students with the utility and application of Physical Geography in different regions and environment.
4.	To make students aware about Earth system (Lithosphere, Atmosphere, biosphere and Hydrosphere.)

Class: F.Y. B. A. Semester – I (Physical Geography)	
Sr. No.	**Course Outcomes** **Upon successful completion of this course, the students will be able to :**
1.	The geographical maturity of students in their current and future courses shall develop.
2.	The student's develops theoretical, applied and computational skills.
3.	Student-employability enhances and English becomes the medium of their livelihood and personality

Class: S.Y.B.A. : Paper-Gg:2207 – Geography of Disaster Management	
Sr. No.	**Objectives**

1.	To introduce students the concept of disaster & its relation with geography.
2.	To acquaint the students with the utility &application of hazards in different areas & its management.
3	To make the students aware of the need of protection & disaster management.

Class: S.Y.B.A. : Paper-Gg:2207 – Geography of Disaster Management	
Sr. No.	**Course Outcomes**
1.	Students Identify different types of disasters within their particular geographic context, and the associated perceptions of risk and behavioral response
2.	They understand the processes which shape disaster risk and perceptions
3.	Students use the knowledge gained to evaluate local disaster plans and mitigation efforts based on the geography of place.
4.	Students analyze the information gleaned from lecture and readings to critique local disaster plans, popular media,
5.	Synthesize the information into a detailed snapshot of community preparedness and response to the geography of the area.

Class: S.Y.B.A. (S1) : Paper- Gg: 2208 – Tourism Geography	
Sr. No.	**Objectives**
1.	To acquaint the students basic concepts of Geography & Tourism
2.	To aware the students with the utility and application of Tourism.
3.	To help the students & society to understand the interrelationship between tourism and employment generation opportunities.
4.	To understand the impact of tourism on Physical and Human Environments.

Class: S.Y.B.A. (S1) : Paper- Gg: 2208 – Tourism Geography	
Sr. No.	**Course Outcomes**
1.	Students able to demonstrate an understanding of the fundamental principles, concepts and knowledge of Geo-tourism from the perspective of the National Geographic Society's guidelines.
2.	Students identify the principles, practices, and philosophies, which affect the economic, social, cultural, psychological, and marketing aspects of human travel and the tourism industry.

3.	Students articulate the key concepts and methods used to investigate and make sense of the role, significance and impact of tourism that sustains or enhances the geographical character of a place—its environment, culture, aesthetics, heritage, and the well-being of its residents.
4.	Students evaluate the conflicting agenda of society's various stakeholders and the need to reconcile environmental, economic and socio-cultural concerns.
5.	Students critically examine community Geo-tourism issues and develop coherent solutions.

Class: S.Y.B.A. (S2)-Paper: Gg- 2209 – Fundamentals of Geographical Analysis	
Sr. No.	**Objectives**
1.	To enable students to use various Projections and Cartographic Techniques.
2.	To acquaint the students with basic of Statistical data.
3.	To acquaint the students with the principles of surveying, its importance and utility in the geographical study.

Class: S.Y.B.A. (S2)-Paper: Gg- 2209 – Fundamentals of Geographical Analysis	
Sr. No.	**Course Outcomes**
1.	Operate different survey instrument and be able to read, collect and record data using theinstruments.
2.	Understand and construct different types of scale, reduce and enlarge maps according to the required scale.
3.	Students prepare drawing of profile with the help of Dumpy level.
4.	Students learn drawing of Scale Diagram for representing geographical data.
5.	Studentsacquire Skill of drawing of map, grapes, diagrams scale.
6.	They become aware to
7.	Get skill of Drawing of projection.
8.	Understandhowmapsareclassifiedforspecificusagesand constructdifferentmapswiththehelpofdifferentmapprojections
9.	Understand the different surveying techniques.
10.	Solve statistical problems by adopting statistical techniques necessary for computing primary and secondary data and interpret the findings.
11.	Studentsacquire Knowledge about preparation of layout.

T.Y.B.A.-Paper- Gg: 3207 – Regional Geography of India	
Sr. No.	**Objectives**
1.	To acquaint the students with geography of our Nation.
2.	To make the student aware of the magnitude of problems and Prospects at National level.
3.	To help the students to understand the inter relationship between the subject and the society.
4.	To help the students to understand the recent trends in regional studies.

T.Y.B.A.-Paper- Gg: 3207– Regional Geography of India	
Sr. No.	**Course Outcomes**
1.	Identify natural regions of India based on physical environment and understand the regional variation due to differences in physical environment.
2.	Understand population of India in terms of their quality and spatial distribution pattern and the prospect and problems of population growth.
3.	The Student comprehendthelinkagesofsystematicgeographyofIndia with the regional personality of thecountry
4.	Understand the location Physiography, Drainage, Climate, and Vegetation of India
5.	The Students know the silent feature, problems and prospects of Agriculture.
6.	Understandhow economic activities in India are determined by both the physical as well as human environment.

T.Y.B.A.- Paper- Gg:-3208 – Agricultural Geography	
Sr. No.	**Objectives**
1.	To introduce students Agricultural activities and its rel.
2.	To familiarize the students with new modern technical methods and their applications in Agriculture activities.
3.	To enable students to apply previously knowledge in problems and prospects in agriculture.

T.Y.B.A.- Paper- Gg:-3208 – Agricultural Geography	
Sr. No.	**Course Outcomes**
1.	Students Know the importance of agricultural geography in the overall understanding of man and environment relationship.

2.	Students Identify agricultural regions with special reference to India and understand the evolution and development of these regions.
3.	Studentsevaluate the significance of science and technology in the development of agriculture and the implications on society and ecology.
4	Students understand the determinants of agricultural activities that lead to spatial variation.
5.	Students demonstrate an understanding of the concept, principles and theories in the field of agricultural systems.

T.Y.B.A.-Paper- Gg:3209 – Techniques of Spatial Analysis	
Sr. No.	**Objectives**
1.	To introduce the students with SOI Toposheets and to acquire the knowledge of Toposheet Reading/ Interpretation.
2.	To familiarize the students with the weather instruments and their applications in Geographical phenomena.
3.	To acquaint the students with IMD weather maps and to gain the knowledge of weather map Reading/ Interpretation.
4.	To train the students in elementary statistics as an essential part of geography.
5.	To awareness about GIS among the students.

Sr. No	**Course Outcomes**
1.	Read Toposheets interprets the data on the map.
2.	Students understand how to represent topographical features in the form of contours and profiles.
3.	Students are able to evaluate the land capability and feasibility through the use of slope and drainage analysis.
4.	They develop their interest and analyze drama independently.
5.	Read maps and interpret the data in the Weathermap.
6.	Students solve statistical problems by adopting statistical techniques necessary for computing primary and secondary data and interpret the findings.
7.	Understand interpretation of weather images.
8.	Compute the Correlation of Pearson's and Spearman's methods.
9.	Understand the representation of Statistical data

10.	Compute of Measures of Central tendency of dispersion.
11.	Calculation and plotting moving Average.
12.	Statistical data Analysis of simple regression

DEPARTMENT OF ECONOMICS

Program Specific Outcomes On completion of B.A (Economics),

Students are able to:

1. To able to understand basic concepts of economics.
2. To able to analyze economic behavior in practice.
3. Understand the economic way of thinking.
4. The ability to write clearly economic point of view.
5. To create students' ability to suggest of the various economic problems.

COURSE OUTCOMES: B. A. Economics

1. To understand to various issues of Indian economic Environment
2. To understand Agriculture, Industry, economic Environment
3. Create the awareness among the students of Modern Banking System.
4. Understand commercial banking system in India
5. Understand working & operation of RBI
6. Understand cooperative and rural banking in India
7. Understand the Indian money market
8. Understand the Indian capital market
9. To understand 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.
10. Understand concept of Revenues and cost of Production.
11. Understand of national income
12. Understand consumption & Investment function
13. Understand process of credit creation by commercial banks
14. Understand Characteristics of Developing Countries.
15. Understand Constraints on Development Process.
16. To understand macroeconomic policies, roll of foreign capital and economic planning etc. in developing countries.
17. Understand Nature, Scope and Importance of International Economics
18. Understand gains from international trade & their measurements
19. Understand trade policies in India
20. Understand international financial institutions

21. Understand foreign direct investments
22. Understand foreign exchange market
23. To understand various Approaches about Role of Government and Principle of Maximum Social Advantage- Dr. Dalton.
24. Understand concept of public expenditure, public revenue
25. Understand incidence & approaches of taxation
26. Understand concept of public debt
27. Understand concept of budget & deficit finance

PROGRAM SPECIFIC OUTCOMES: B. A. ECONOMICS

On completion of B.A (Economics), Students are able to:

1. Understand basic concepts of economics.
2. To able to analyze economic behavior in practice.
3. Understand the economic way of thinking.
4. The ability to analyze historical and current events from an economic perspective.
5. The ability to write clearly expressing an economic point of view.

COURSE OUTCOMES: M. A. ECONOMICS

On completion of the course, students are able to

1. Understand the Basic Micro- Economic Problems of Scarcity and Choice,
2. To understand concepts one and two input production function.
3. Factor, Returns to Scale, Cobb- Douglas Production Function.
4. To understand concepts of Partial and General Equilibrium
5. To understand Concept of Social Welfare
6. To understand Role and functions of the Government in an economy.
7. Understand concept of budget & deficit finance.
8. Understand incidence & approaches of taxation
9. Understand concept of public debt
10. Understand concept of budget & deficit finance
11. Understand gains from international trade & concepts of term of trade.

DEPARTMENT OF HINDI (2018-19)
Course Outcomes (Cos)

Sr. No.	Class	Course code	Course Name	Course Outcome
1.	F.Y.B.A	1094	हिंदी सामान्य G.1	1. हिंदी साहित्य के प्रति रूझान को बढ़ावा 2. साहित्य की विविध विधाओं से परिचय 3. राष्ट्रप्रेम, सामाजिक प्रतिबद्धधता, वैज्ञानिकता आदि जीवनमूल्य 4. प्रयोजनमूलक हिंदी से परिचय 5. विचारक्षमता तथा लेखन क्षमता का विकास 6. सृजनात्मकता (Creativity) का विकास 7. राष्ट्रभाषा हिंदी का प्रचार - प्रसार
2.	F.Y.B.Com	1543	वैकल्पिक हिंदी - पेपर 1	1. हिंदी गद्य - पद्य के प्रतिनिधि रचनाकारों का परिचय 2. भावात्मक तथा सर्जनात्मक विकास 3. राष्ट्रीय एकता, सामाजिक उत्तरदायित्व, वैज्ञानिकता आदि मूल्य 4. वाणिज्यिक तथा बैंकिंग की पारिभाषिक शब्दावली का आकलन 5. पत्रलेखन कौशल 6. विज्ञापन लेखन कौशल 7. विचारक्षमता तथा कल्पनाशक्ति 8. सृजनात्मकता एवं संभाषण कला 9. व्यावहारिक हिंदी कौशल 10. सफल व्यापारी एवं उद्योजकता के गुण 11. पर्यावरण के प्रति सजगता एवं आस्था 12. चयनित व्यवसाय के लिए विशिष्ट योग्यताएँ 13. राष्ट्रभाषा हिंदी का प्रचार - प्रसार
3	S.Y.B.A	2094	कहानी काव्य एवं लेखन G-2	1. हिंदी के प्रतिनिधि कहानीकारों एवं कवियों से परिचय 2. हिंदी कहानी तथा नई कविता की विशेषताएँ 3. कार्यालयीन तथा व्यावहारिक पत्रों का स्वरूप 4. पारिभषिक शब्द, विज्ञापन का परिचय 5. भेंटवार्ता, साक्षात्कार एवं वृत्तांत लेखन कौशल से परिचय

				7. हिंदी भाषा के व्यावहारिक क्षेत्रों से परिचय 8. हिंदी शब्द - युग्म की जानकारी एवं प्रयोग 9. संभाषण कौशल 10. कहानी - सृजन के लिए प्रेरणा 11. जीवनमूल्यों से परिचय
4	S.Y.B.A	2095	हिंदी भाषा का विकास S-1	1. भाषा की परिभाषा एवं विशेषताओं से परिचय 2. राजभाषा हिंदी के संवैधानिक स्वरूप से परिचय 3. भाषा के वैज्ञानिक अध्ययन की दृष्टि का निर्माण 4. हिंदी वर्तनी एवं मानकीकरण की जानकारी 5. हिंदी के लिपि चिह्नों से परिचय 6 . भाषा प्रयोगशाला में ध्वनि से संबंधित जानकारी एवं प्रयोग 7. राष्ट्रभाषा हिंदी का प्रचार करनेवाली संस्थाओं का अध्ययन
5	S.Y.B.A	2096	उपन्यास,नाटक तथा मध्ययुगीन हिंदी काव्य S-2	1. उपन्यास एवं नाटक के तत्वों का आकलन 2.उपन्यास एवं नाटक का आस्वादन 3. उपन्यास एवं नाटक की समीक्षण क्षमता का विकास 4. मध्ययुगीन संतकाव्य से परिचय 5. मध्ययुगीन काव्य की प्रासंगिकता 6. साहित्य कृतियों के माध्यम से साहित्य के शिल्प और सौंदर्य का परिचय 7. संवाद कौशल 8.नाट्य प्रस्तुति कौशल
6.	T.Y.B.A	3094	आत्मकथांश काव्य -नाटक तथा लेखन G-3	1. हिंदी आत्मकथा तथा काव्य - नाटक विधाओं का सामान्य परिचय 2. साक्षात्कार कौशल (Interview skills) 3. सरकारी पत्राचार लेखन कौशल 4. पारिभाषिक शब्दावली तथा संक्षिप्तियाँ 5. समाचार लेखन कौशल 6. अनुवाद कौशल(Translation Skills) 7. संवाद कौशल 8.कार्यक्रम संयोजन कौशल(Event Management Skills)

7.	T.Y.B.A	3095	हिंदी साहित्य का इतिहास S-3	1. हिंदी साहित्य के इतिहास की लेखन परंपरा से परिचय 2. कालविभाजन, नामकरण एवं युगीन पृष्ठभूमि से परिचय 3. हिंदी साहित्य के प्रतिनिधि रचनाकार एवं रचनाओं से परिचय 4. हिंदी साहितय का विकासक्रम 5. साहित्य और युग जीवन का संबंध 6. आधुनिक युग के साहित्य की प्रवृतियों से परिचय
8.	T.Y.B.A	3096	काव्यशास्त्र S-4	1. साहित्य की परिभाषाओं से परिचय 2. कव्यहेतु,कव्यप्रयोजनों का ज्ञान 3. काव्य के तत्व ,काव्य के भेद तथा शब्दशक्ति से परिचय 4. छंद एवं अलंकारों का सोदाहरण परिचय 5. साहित्य की विविध विधाओं का तत्वगत अध्ययन 6. रस के स्वरूप ,अंग एवं भेदों का विवेचन 7.आलोचना दृष्टि का विकास

Faculty of Commerce

Programme: B.Com (Banking & Costing)

Programme Outcomes (POs)-B.COM

Sr. No.	Programme Outcomes
1	Competent Business Manager Associates with requisite knowledge, skills and right attitude which is need of today's market scenario
2	Good Accountant with necessary skill acquired through some add-on courses
3	Prospective Leader of Global Business Houses
4	Future Entrepreneur with professional and ethical values
5	Learning Attitude to Sustain in Global Competitive world

Programme Specific Outcomes (PSOs)

Sr. No.	Programme Specific Outcomes (Banking and Finance)

1	1. Gain an insight into the functioning role of financial instructions in the Indian economy.
2	Understand of operations and developments in financial market in India.
3	Get acquainted with Banking Law and Practice in relation to the Banking system in India.
4	Understand the legal aspects of Banking transactions and its implications as Banker and Customer.
5	Become aware of the Banking Law and Practice in India.

Sr. No.	Programme Specific Outcomes (Cost and Works Accounting)
1	Able to understand basic concepts in Cost & Works Accounting
2	Able to classify the expenditure, analyses it, prepare report and comment on it.
3	Apply the knowledge to prepare cost sheet and work in a costing department of any organization as an associate.
4	Able to work and handle inventory/store department as a store keeper
5	Prepare for post graduate studies and to achieve success in their professional careers.

Course Outcome (COs):

Programme	Course Code	Course Name	Course Outcome
F. Y. B.Com	101	Compulsory English	-
	102	Financial Accounting	1. The concepts, nature and purpose of financial statements in relationship to decision making. 2. How to use the fundamental accounting equation to analyze the effect of business transactions on an organization's accounting records and financial statements. 3. How to use a basic accounting system to create the data needed to solve a variety of business problems. 4. How to use accounting information to solve a variety of business problems.
	103	Business Economics (Micro)	-

	104(A)	Business Mathematics and Statistics	1. Prepare for competitive examination. 2. Understand the concept of simple ,compound interest 3. Know about concept of population, sample & frequency distribution to make decision. 4. Understand technique of different type of Index Number (SENSEX & NIFTHY)
	105	Org. Skill Development	
		Banking and Finance	1. Student is acquaint with theoretical knowledge of Evolution, functions, services of banks 2. Student can open and operate his bank account. 3. Student will know different instruments used in banking with their legal aspect.
		Commercial Geography	1. The concept of Organization and Modern Office. 2. The role and Functions of Office Manager. 3. How to develop the insights regarding Organizational Skills for Office Managers. 4. The functioning of Modern office appliances equipments and e- format records.
	106	Consumer Protection and Busi. Ethiscs	1. Aware about consumer right, Duties and mechanism for resolving their disputes. 2. Understand about low relating to consumers. 3. Know students with role of business ethics in various functional areas.
	107	Marathi	-
		Hindi	-

Programme	**Course Code**	**Course Name**	**Course Outcome**
S. Y. B.Com	201	Business Communication	1. The concept, process and importance of communication. 2. The new technologies in business communication. 3. How to use various soft skills in business. 4. How to draft various letters in business. 5. Business communication skills through the application and exercises.
	202	Corporate Accounting	1. Corporate Accounting in conformity with the provisions of Companies Act and Accounting as per Indian Accounting Standards. 2. The conceptual aspect of corporate accounting. 3. Various skills about Computerized Accounting and Accounting Standards.

			4. Various concepts related to companies 5. i.e. liquidation, amalgamation, absorption, re-construction and holding company.
	203	Business Economics (Macro)	-
	204	Business Management	1. Understand basic knowledge and business management concept. 2. Know about various function of management.
	205	Elements of Company Law	1. Student get key information from formation of company up to winding up of the company. 2. Student understands the roles, duties and responsibilities of key persons 3. Student acquaint with the knowledge of various documents involved in from formation up winding up of company.
	206	Banking and Finance	1. Role and structure of Indian banking system. 2. Various types of banks and their special features. 3. The reforms and other developments in the Indian Banking. 4. The functions and role of Reserve Bank of India
		Cost and Works Accounting	1. Student is acquaint with basics of cost accounting 2. Student can classify, analyses, summarize and comment on cost data 3. Student learns procedural aspect in handling, recording of material and how to maintain various books of materials

Programme	**Course Code**	**Course Name**	**Course Outcome**
T. Y. B.Com	301	Busi. Regulatory Framework (M. Law)	1. The basic concepts, terms & provisions of Mercantile and Business Laws. 2. How affect these laws on business, trade and commerce. 3. The concept of Intellectual Property Rights: (IPRs) and its various legal aspects.
	302	Advanced Accounting	1. The various advanced accounting concepts and its Practical approach. 2. Nature of Banking Company and its Financial Statements. 3. The practical approach of account writing using Software. 4. Concept of analysis of financial statements.

	303 (A)	Indian and Global Eco. Development	-
	304	Auditing and Taxation	1. The concept and principles of Auditing, Audit process, Assurance Standards, Tax Audit, and Audit of computerized Systems. 2. How to prepare the Audit report and its importance. 3. Computation of Taxable Income under the different Heads of Income. 4. The process of Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection
	305	Banking And Finance – II	1. The Financial Markets and its various segments. 2. The operations and developments in financial markets in India. 3. The functioning and role of financial institutions in the Indian Economy. Organization Functions & Working of 4. Regulatory Institutions in Financial Market.
		Cost and works accounting – II	1. Understand the concept and principles application of overheads. 2. Know about various methods of costing and their applications.
	306	Banking And Finance – III	1. Banking Law and Practice in relation to the Banking system in India. 2. The legal aspects of Banking transactions and its implications as Banker and Customer. 3. The Banking Law and Practice in India.
		Cost and works accounting – III	1. Concepts, procedures and legal Provisions of cost audit and costing techniques. 2. Application of Marginal Costing Technique. 3. Management information system in Costing. 4. Cost Accounting Standards issued by Institute of Cost and Management of India. =

Department of BBA (CA)

Program Outcomes (POs)

At the end of the Program, students will be able to:

- POs 1: Ability to understand the concepts of key areas in computer science.
- POs 2: Learn and apply computing and managerial principles to excel in professional career in the field of Computer Applications as an individual, as part of a team, and to deliver within constraint limits as a professional.
- POs 3: Exhibit professional ethics, cyber regulations and communication skills, engage in lifelong learning and to adapt emerging technologies and tools for developing innovative software solutions.

- POs 4: Ability to design and develop system, component or process as well as test and maintain it so as to provide promising solutions to industry and society.

Program Specific Outcomes (PSOs).

- PSOs 1: Students should be able to apply modern practices and strategies in software project development using open-ended programming environments to deliver quality product for business success in context with societal needs.
- PSOs 2: An ability to gain knowledge on design and control strategy; techniques to secure information and adapt to the fast changing world of information technology needs.
- PSOs 3: Design and develop Web and Mobile based computer applications
- PSOs 4: An ability to use and develop cloud software, administrative features. infrastructure services and architectural patterns; ethical hacking and forensic security technologies.

Program Educational Objectives (PEOs)

- PEOs 1: Outperform in Information Technology across various specializations like cloud technologies.
- PEOs 2: Gain exposure in preventive, ethical hacking and forensic security technologies.
- PEOs 3: Develop skills to demonstrate functional knowledge of data centres and modern storage methods.

Course Outcomes (Cos)

F.Y.B.B.A.(C.A.)		
Subject Code	Subject Name	Subject Outcome
101	Modern Operating Environment & MS Office	1) Studied about fundamental knowledge of computers 2)Learned about Input and Output Devices 3)Studied about MS Office 4) Learned concept regarding Operating System,LAN,WAN.
102	Financial Accounting	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)
103	Programming Principles & Algorithms	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.

104	Business Communication	1) Become adept to communicate and write effectively. 2) Developing and delivering effective presentations. 3) Create awareness among students about Methods and Media of communication. 4) Make students familiar with information technology and improve job seeking skills.
105	Principles of Management	1) Practice the process of management's four functions: planning, organizing, leading, and controlling 2) Evaluate leadership styles to anticipate the consequences of each leadership style. 3) Understand the working of business organization 4) inculcate Entrepreneurial skills
201	Procedure Oriented Programming Using C	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
202	Database Management System	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
203	Organizational Behavior	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) Helps in understanding the basics related to individual behavior and its impact on their performance
204	Computer Application in Statistics	1) To understand the power of excel spreadsheet in computing summary statistics. 2) To understand the concept of various measures of central tendency and variation and their importance in business. 3) To understand the concept and applications of probability, probability distributions in real life situations. 4) To understand simulations in business world and decision making.
205	E-Commerce Concepts	1) Studied about concepts of E-Commerce, E-com application, Website and hosting website domain name. 2)Electronic fun transfer and e-cash ,paper less bill

		concepts studied 3) Studied about intranet ,extranet and internet Learned security in e- com- encryption types.

S.Y.B.B.A.(C.A.)		
Subject Code	Subject Name	Subject Outcome
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 maths 2) Studied business problems and conversion into business maths 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 activeX 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 every where. 3). Students can go for Certifications like CCNA which helps to get better opportunities in M.N.C's.
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

T.Y.B.B.A.(C.A.)		
Subject Code	Subject Name	Subject Outcome
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 Learned the concept of networking in java and concept like IP address ,Data Input and Output Stream
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 M.N.C's.

Faculty of Science

Department of Chemistry

Programme Outcomes (POs)

The Outcomes of UG Course, B. Sc. in Chemistry

At the Completion of B. Sc. in Chemistry the Students:

Provide a broad foundation in chemistry that stresses scientific reasoning and Analytical problem solving with a molecular perspective.

Achieve the skills required to succeed in graduate school, the chemical industry and professional school.

Get exposures of a breadth of experimental techniques using modern instrumentation?

Understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.

Understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.

Learn the laboratory skills needed to design, safely and interpret chemical research.

Acquire a foundation of chemistry of sufficient breadth and the depth to enable them to understand and critically interpret the primary chemical literature.

Develop the ability to communicate scientific information and research results in written and oral formats.

Learn professionalism, including the ability to work in teams and apply basic ethical principles.

The Outcomes of PG Course, M. Sc. In (Organic Chemistry)

This two year programme offers the opportunity to study chemistry at an advanced level, covering both the traditional core areas of chemistry as well as more specialist courses aligned to the research groupings of the department. The course provides opportunity for students to develop and demonstrate advanced knowledge understanding and practical / research skill.

Programme Specific Outcomes (PSOs)

On the completion of B.Sc. Chemistry the students:

P S O 1:- Understand the scope, methodology and application of modem chemistry

P S O 2:- Study theoretical and practical concepts of instruments that are commonly used in most chemistry field.

P S O 3:- Plan and conduct scientific experiments and record the results of such experiments.

P S O 4:- Get acquaint with safety of chemicals, transfer, and measurement of chemicals, preparation of solutions, and using physical properties to identity compounds and chemical reactions.

P S O 5:- Describe how chemistry is useful to solve social, economic and environmental problem and issues facing our society in energy, medicine and health.

M.Sc. Chemistry

Programme specific outcomes:- A Student

PSO1 Gains complete knowledge about all fundamental aspects of all the elements of chemistry

PSO2 understands the background of organic reaction mechanisms, complex chemical structures, Instrumental method of chemical analysis, molecular rearrangements and separation techniques.

PSO3 Appreciates the importance of various elements present in the periodic table, coordination chemistry and structure of molecules, properties of compounds, structural determination of complexes using theories and instruments.

PSO4 Gathers attention about the physical aspects of atomic structure, dual behaviour, reaction pathways with respect to time, various energy transformations, molecular assembly in nanolevel, significance of electrochemistry, molecular segregation using their symmetry.

PSO5 Learns about the potential uses of analytical industrial chemistry, medicinal chemistry and green chemistry.

PSO6 Carry out experiments in the area of organic analysis, estimation, separation, derivative process, inorganic semi micro analysis, preparation, conductometric and potentiometer

- ## Course Outcomes (COs):

F.Y.B.Sc.

Chemical Energetics

1.Students will be able to apply thermodynamic principles to physical and chemical process

2.Calculations of enthalpy , Bond energy, Bond dissociation energy , resonance energy

3.Variation of enthalpy with temperature –Kirchoff's equation

4.Third law of thermodynamic and its applications

Chemical Equilibrium

Knowledge of Chemical equilibrium will make students to understand

1. Relation between Free energy and equilibrium and factors affecting on equilibrium constant.

2. Exergonic and endergonic reaction

3. Gas equilibrium , equilibrium constant and molecular interpretation of equilibrium constant

4. Van't Haff equation and its application

Ionic equilibria

Ionic equilibria chapter will led students to understand

1. Concept to ionization process occurred in acids, bases and pH scale

2. Related concepts such as Common ion effect hydrolysis constant, ionic product, solubility product

3. Degree of hydrolysis and pH for different salts , buffer solutions

Learning Outcomes

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

5 .Importance of chemical safety and Lab safety while performing experiments in laboratory
6 .Determination of thermochemical parameters and related concepts
7. Techniques of pH measurements
8. Preparation of buffer solutions
9. Elemental analysis of organic compounds (non instrumental)
10. Chromatographic Techniques for separation of constituents of mixtures

1. Atomic Structure

1. Various theories and principles applied to revel atomic structure
2. Origin of quantum mechanics and its need to understand structure of hydrogen atom
3. Schrodinger equation for hydrogen atom
4. Radial and angular part of hydrogenic wave functions
5. Significance of quantum numbers
6. Shapes of orbitals

2. Periodicity of Elements

1. Rules for filling electrons in various orbitals.
2. Electronic configuration of an atom and anomalous electronic configurations.
3. Stability of half-filled and completely filled orbitals.
4. Concept of exchange energy and relative energies of atomic orbitals
5. Skeleton of long form of periodic table.
6. Block, group, modern periodic law and periodicity.
7. Classification of elements as main group, transition and inner transition elements
8. Name, symbol, electronic configuration, trends and properties.
9. Periodicity in the following properties in details:
10. Effective nuclear charge, shielding or screening effect; some numerical problems.
11.Atomic and ionic size.

12.Crystal and covalent radii

13. Ionization energies

14. Electronegativity- definition, trend, Pauling electronegativity scale.

15. Oxidation state of elements

3. Chemical Bonding

1. Attainment of stable electronic configurations

2. Types of chemical bonds- Ionic, covalent, coordinate and metallic bond

3. Ionic Bond- characteristics of ionic bond, types of ions, energy consideration in ionic bonding, lattice and solvation energy and their importance in the context of stability and solubility of ionic compounds, Born-Lande equation, Born-Haber cycle, Fajan's rule, bond moment, dipole moment and % ionic character.

4. Covalent bond- VB approach, Hybridization with example of linear, trigonal, square planer, tetrahedral, TBP, and octahedral.

5. VSEPR theory – assumption, need of theory, applications of

6. Concept of different types valence shell electron pairs and their contribution in bonding

10. Application of non-bonded lone pairs in shape of molecule

11. Basic understanding of geometry and effect of lone pairs with examples such as ClF3, Cl2O, BrF5, XeO3 and XeOF4.

4. Calculations used in Analytical Chemistry

1. Calculations of mole, molar concentrations and various units of concentrations which will be helpful for preparation of solution

2. Relation between molecular formula and empirical formula

3. Stoichiometric calculation

Learning Outcome

1. Inorganic Estimations using volumetric analysis

2. Synthesis of Inorganic compounds

3. Analysis of commercial products

4. Purification of organic compounds

5. Preparations and mechanism of reactions involved

Course Outcomes Practicals

CH- 101: Physical Chemistry

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

CH- 102: Organic Chemistry

Will learn Fundamentals of organic chemistry, stereochemistry (Conformations, configurations and nomenclatures) and functional group approach for aliphatic hydrocarbons

CH- 201: Organic Chemistry

Will learn Fundamentals of organic chemistry, stereochemistry (Conformations, configurations and nomenclatures) and functional group approach for aliphatic hydrocarbons

CH- 201: Inorganic Chemistry

Students will learn quantum mechanical approach to atomic structure, Periodicity of elements, various theories for chemical bonding and calculations used in analytical chemistry

CH-202: Organic Chemistry

Students will learn Functional group approach for the various reactions (preparations & reactions) incontext to their structure

Lab Course CH 103 and CH-203

1. The practical course is in relevance to the theory courses to improve the Understanding of the concepts.
2. It would help in development of practical skills of the students.
3. Use of microscale techniques wherever required

S.Y.B.Sc.

Course	Outcomes
Physical Chemistry	• Concept of kinetics , terms used , rate laws , types of order Discuss examples of first order and second order reaction. Pseudo molecular reactions • Factors affecting on rate of reaction Techniques of measurement of rate of reaction • Know about photochemistry • Understand difference between thermal and photochemical reactions • Understand laws of photochemistry • Learn what is quantum yield and it's measurement

	• Know Types of photochemical reactions and photophysical process Know about quenching and chemiluminescent • Concept of distribution of solute amongst pair of immiscible solvents ii. Distribution law and it's thermodynamic proof • Distribution law and nature of solute in solution state iv. Application – Solvent extraction • Students should learn • What is Analytical Chemistry • Chemical analysis and its applications • Sampling • Common techniques • Instrumental methods and other techniques • Choice of method • Meaning of error and terms related to expression & estimation of errors • Methods of expressing accuracy and precision • Classification of errors • Significant figures and computations • Distribution of errors • Mean and standard deviations • Reliability of results Basic principles in qualitative analysis • Meaning of common ion effect • Role of common ion effect and solubility product • Different groups for basic radicals • Group reagent and precipitating agents
Organic Chemistry	• Students should be able to – • Identify chiral center in the given organic compounds. • Define Erythro, threo, meso, diasteroisomers with suitable examples. • Able to find R/S configuration in compounds containing two chiral centers. • Explain Bayer's strain theory, Heat of combustion and relates stability of cycloalkanes.

	• Explain the stability of cyclohexanes. • Draw the structure of boat and chair configuration of cyclohexane. • Draw axial and equatorial bonds in cyclohexane. • Draw structure of conformations of mono- & disubstituted cyclohexanes • Explain the stability of axial and equatorial conformation of monosubstituted • Cyclohexanes. Define and classify heterocyclic compounds. • Use Huckel rule to predict aromaticity. • Suggest synthetic route for preparation of various heterocyclic compounds. • Write and complete various reactions of heterocyclic compounds. • Predict products.
Inorganic Chemistry	• A student should be able – • To differentiate between ore and minerals. • To differentiate between calcination and roasting and smelting. • To know the different methods for separation of gangue or matrix from metallic compounds. • To know the terms smelting, flux. • A student should be able - • To know physico-chemical principles involved in electrometallurgy. • To understand electrolysis of alumina and its refining. • To explain the uses of Aluminum and its alloys. • To know purification of bauxite ore. To explain the term pyrometallurgy and to explain the physico chemical principles • involved in the reduction process by carbon monoxide. • To know different reactions in the blast furnace. • To differentiate between properties of pig iron and wrought iron.

	• To explain the basic principles of different methods for preparation of steel. • To explain the merits and demerits of different methods.
Analytical Chemistry	• Meaning of equivalent weight, molecular weight, normality, molality, primary and • secondary standards. • Different way to express concentrations of the solution. Preparation of standard solution. • To solve numerical problems. • Calibrate various apparatus such as burette, pipette, volumetric flask, barrel pipette • etc. • Types instrumental and non instrumental analysisi. Explain role of indicators. • Know mixed and universal indicators. • Know neutralization curves for various acid base titration • Know principle of complexometric precipitation and redox titrations. • Know the definitions and difference between iodometry and iodimetry. • To know standardization of sodium thiosulphate and EDTA. • Reactions between CuSO4 and Iodine and liberated I2 and Na2S2O3 • Choice of suitable indicator. • Estimate copper from CuSO4 and available chlorine in bleaching powder. • Prepare standard silver nitrate solution. • Mohr's and Fajan's method. • Determine the amount of halides separately and in presence of each other.

T.Y.B.Sc

Course	Outcomes
Physical Chemistry	After studying this topic students are expected to known • Expression for rate constant k for third order reaction • Examples of third order reaction • Characteristics of third order rate constant k • Derivation for half-life period of third order reaction and to show that half-life • inversely proportional to square of initial concentration of reactants. • Graphical evaluation of energy of activation • xi. Solve the numerical problems based on this topic.
Inorganic Chemistry	• ii. Know the assumptions and limitations of VBT • iii. Understand the need of concept of MOT • iv. Know LCAO principal and its approximation • v. Understand and show the formation of bonding and antibonding MO's • vi. Draw the shapes of s, p, d orbital • vii. Draw combinations of s-s, s-p, p-p and d-d orbital to form σ and π molecular orbitals. • viii. Give the comparison of a) Atomic orbital and molecular orbital • b) BMO and ABMO • c) Sigma and pi MO's
Organic Chemistry	• Definition and type of nucleophiles and leaving groups • 2. Different types of nucleophilic substitution reactions • 3. Definition of inversion and racemization • 4. The kinetics, mechanism & stereochemistry of these reactions • 5. Whether a given reaction follows SN1 or SN2 mechanism? • 6. The comparison between SN1 & SN2 reactions • 7. An SNi mechanism in presence and absence of pyridine

	• 8. To predict product/s or supply the reagent/s for these reactions • Different types of carbon-carbon unsaturated compounds • 2. Orientation / rules in addition reactions • 3. The structure of carbonyl group • 4. Reactivity concept • 5. Correct mechanism of addition reactions using different reagents • 6. Types of some known addition reactions • 7. To predict product/s or supply the reagent/s for such reactions
Analytical Chemistry	• Principles of common ion effect and solubility product • 2. Formation of complex ion • 3. Factors affecting on solubility of precipitation • 4. Phenomenon of super saturation and precipitation formation Methods of thermo gravimetric analysis • 2. Principles of TGA and DTA • 3. Types of TGA • 4. Relation between TGA and DTA • 5. Thermal equation of TGA • Principles of Spectrophotometric analysis and properties of electromagnetic radiations • 2. Different Terms like absorbance, transmittance, and molar absorptivity • 3. Mathematical Statement and derivation of Lambert's Law and Beer's Law • 4. Different wavelength selectors and their importance
Industrial Chemistry	The students are expected to learn; • Importance of chemical industry, • Meaning of the terms involved, • Comparison between batch and continuous process, • Knowledge of various industrial aspects • Students should know • Scope, • Nutritive aspects of food constituents,

	• Quality factors and their measurements, • Food deterioration factors and their control; • Food preservation and Food additives • Learn importance of these industries, • Manufacture of cement by modern methods • Definition of setting and hardening • iv. Reinforced concrete
Polymer Chemistry.	The students are expected to learn the following aspects of Polymer Chemistry • What is polymer degradation? • Chemical and geometric structures of polymers. • Important polymers like PVC, polystyrene, polyvinyl alcohol, Teflon, Resins, nylon, epoxy • Polymers, etc. • 57 • Uses & properties of polymers. • Role of polymer industry in the economy. • Advantages of polymers. • Some industrially important polymers

Course Outcomes Practical

Organic chemistry-I

Inorganic chemistry-I

Physical chemistry-I

CSO-1 Learns the fundamentals of reaction mechanisms

CSO-2 Understands the mechanism of nucleophilic substitution and elimination reactions

CSO-3 Appreciates the fundamentals of aromaticity in organic chemistry

CSO-4 Acquires the 3-D aspects of organic molecules.

CSO-5 Gains the potential about complex vitamin and nucleic acid structure

CSO-1 Understands the background of bonding forces

CSO-2 Appreciates the importance of various theories in bonding

CSO-3 Learns the chemistry basis of solid state

CSO-4 Gains the imagination of 3D structures of silicates and caged compounds

CSO-5 Estimates the importance of extractive metallurgy

CSO-1 Understands the various theories of electrolytic conductance

CSO-2 Recognizes the dynamics of electrode reaction

CSO-3 Learns the classical status of thrmodynamics

CSO-4 Appreciates the fundamentals of molecular thermodynamics

CSO-5 Estimates the basis of chemical surfaces

Instrumental method of analysis

Inorganic practical-I

CSO-1 Analysis the variations of practical errors

CSO-2 Gains the potential about different precipitation processes

CSO-3 Determines the procedure for electro analytical techniques

CSO-4 Determines the procedure for thermo analytical techniques

CSO-5 Validates the strength of spectro analytical techniques

CSO-1 Determines the procedure for semi micro analysis of inorganic salt mixture

CSO-2 Understanding the procedure for semi micro qualitative analysis

CSO-3 Estimates the accurate analytical procedure of analysis

CSO-4 Appreciates the procedure for inorganic analysis

CSO-5 Learns the steps involved in the complex formation process

CSO-1 Understands the various source for collection of raw materials

CSO-2 Gains the importance about manufacturing process

CSO-3 Determines the necessity for small scale industries

CSO-4 Learns socio impact of sugar and agro chemicals

CSO-5 Validates the cause, consequence and control of pollution

Organic chemistry-II

Inorganic chemistry-II

Physical chemistry-II

CSO-1 Understands the basis of redox reaction

CSO-2 Appreciates the various steps involved in the molecular rearrangements

CSO-3 Visualizes the aromatic electrophilic substitution mechanism

CSO-4 Analyses the cruciality of the stereochemical process

CSO-5 Perceives the concept of conformational analysis

CSO-1 Learns the structure and properties of coordination compounds

CSO-2 Analyses the reaction pathways of complex formation

CSO-3 Validates the role of bioinorganic chemistry in every day action

CSO-4 Appreciates the vibrant role of catalysts in chemical reaction

CSO-5 Visualizes the energy behind the nuclear reaction

CSO-1 Learns the importance of chemical reaction against tine

CSO-2 Validates the theoretical background of rotational spectra

CSO-3 Analyses the physical approach of IR and Raman spectra

CSO-4 Gains knowledge about NQR and ESR spectra

CSO-5 Encompasses the symmetrical utility of molecules

Organic practical-I

Polymer chemistry

Green chemistry

CSO-1 Learns principle of organic estimation

CSO-2 Gains the procedure for organic separation and derivation

CSO-3 Understands the method of organic preparation

CSO-4 Develops the various routes for recrystallization

CSO-5 Identifies the way for identification of components

- **Course Outcomes (COs):**

M.Sc.:

1. Student should visualize/ imagine molecules in 3 dimensions.

2. To understand the concept of symmetry and able to pass various symmetry elements through the molecule.

3. Understand the concept and point group and apply it to molecules.

4. To understand product of symmetry operations.

5. To apply the concept of point group for determining optical activity and dipole moment.

6. Student should understand the importance of Orthogonality Theorem.

7. They should able to learn the rules for constructing character table.

8. Using reduction formulae should be able to find out the possible type of hybridization.

9. Student should know the concept of SALC.

10.Student able to find out character for reducible representation.

11. To know about projection operator.

12. Apply projection operator to find out the normalized wave function for atomic orbital.

13. Student should correlate the application of symmetry to spectroscopy.

14. Students able to find out the possible modes of vibration.
15. From the previous knowledge of symmetry student must able to find out which mode are IR active.

Learning outcomes:

1. Student should understand the detail chemistry of S and P block elements w.r.t. their compounds, their reactions and applications.
2. To learn the advance chemistry of boranes, fullerene, zeolites, polymers etc.
3. Organometallic chemistry of some important elements from the main groups and their Applications

Learning outcomes:

1. Student should able to find out the no of microstates and meaningful term symbols, construction of microstate table for various configuration
2. Hund's rules for arranging the terms according to energy.
3. Student should understand interelectronic repulsion.
4. Student should know the concept of weak and strong ligand field.
5. Student able to find out splitting of the free ion terms in weak ligand field and strong ligand field.
6. To draw correlations diagram for various configurations in Td an Oh ligand field.
7. Student should know basic instrumentation and selection rules and relaxation in rules.
8. Student should know basic d-d transition, d-p mixing, charge transfer spectra.
9. Interpretation of electronic spectra for spin allowed oh and td complexes using Orgel diagram.
10. Understand the concept of spectrochemical series and Nephelauxetic series.
11. Should able to solve numerical based on crystal field parameters.
12. Understand the various terms involved in magnetochemistry.
13. Various phenomenons of magnetism and their temperature dependence.
14. Various experimental methods to find out magnetic moment.
15. Understand the various Quenching of orbital angular momentum.

Learning outcomes:

1) Importance of bioinorganic chemistry.

2) Role of metals in Metalloprotein and metalloenzymes.
3) Similarities in coordination theory for metal complexes and metal ions complexed with biological ligands.
4) Importance and transport of metal ions.
5) Passive transport metal ions by ionophores and gramicidin.
6) Mechanism for active transport of Na+and K+
7) Nerve impulse generation in rod cell of retina.
8) Importance and function of Ca, Fe and Mg in metalloprotein
9) Catalytic role of Mn in photosynthesis.

Learning outcomes:

1. To understand some fundamental aspects of organic chemistry, to learn the conceptaromaticity, to understand the various types of aromaticity

2. To study heterocyclic compound containing one and two hetero atoms with their structure,synthesis and reactions.

3. To know stereochemistry of organic compounds; able to do interconversion of Fischer to Newmann, Newmann to Sawhorse and vice versa, Able to assign R and S to given molecules; Understand stereoselective and stereospecific reactions; acquire knowledge on topicity.

4. To study structure, formation, stability and related name reaction of intermediates like Carbocation, Carbanion, Free Radical, Carbenes and nitrenes; Recognize neighboring group participation
5. To study rearrangement reaction with specific mechanism and migratory aptitude of different groups.
6. To study Ylides and their reaction.
7. To understands the basis of redox reaction; acquire knowledge about the reagents which causes selective oxidation / reduction in various compounds; learn the basic mechanism of oxidation / reduction in organic compounds.

Students will be able to understand –

1. MOT and will be able to extend this in predicting reaction mechanism andstereochemistry of electrocyclic reactions

2. The concepts in free radical reactions, mechanism and the stereochemical outcomes.

3. The basic principle of spectroscopic methods and their applications in structure elucidation of organic compounds using given spectroscopic data or spectra.

Course Outcomes:

The goal of this course is to introduce students to fundamental concepts in Chemical Biology and methods of chemistry used to solve problems in molecular and cell biology. After completion of this course, successful students will:

1) Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.

2) Students will be able to function as a member of an interdisciplinary problem solving team.

3) To impart the students thorough idea in the chemistry of carbohydrates, amino acids, proteins and nucleic acids etc.

4) Be able to describe the chemical basis for replication, transcription, translation and how each of these central processes can be expanded to include new chemical matter.

5) Develop skills to critically read the literature and effectively communicate research in a peer setting.

At the end of course student will understand / able to explain

1. Different characterization technique of solids.

2. Principle of XRD, instrumentation of powder XRD, Brags law, applications of XRDfor crystal structure determination, numerical problems.

3. Principle of SEM, instrumentation of SEM and interpretation of surface morphology of solid from SEM.

4. Principle of TEM, instrumentation of TEM and interpretation of TEM images.

5. Basics of X-rays, Principle of XRF, types of XRF, instrumentation, qualitative and quantitative analysis, numerical.

At the end of course students will able to explain

1. Valence electron count, back bonding in organometallics, spectral characterization of organometallic compounds.

2. Catalytic reaction involving organometallic compounds and mechanism of these reactions

3. Types of reaction involving organometallic compounds

4. Types of reactions in coordination compounds, inert and labile complexes, substitution reactions in coordination complexes and their mechanism, stereochemistry of reaction, kinetics of reactions.

5.The goal of this course is to introduce students to fundamental concepts in Chemical Biology

and methods of chemistry used to solve problems in molecular and cell biology. After completion of this course, successful students will:

6. Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.

7. Students will be able to function as a member of an interdisciplinary problem solving team.

8.To impart the students thorough idea in the chemistry of carbohydrates, amino acids, proteins and nucleic acids etc.

9.Be able to describe the chemical basis for replication, transcription, translation and how each of these central processes can be expanded to include new chemical matter.

10.Develop skills to critically read the literature and effectively communicate research in a peer setting.

11. Describe the importance of chemical biology research and interdisciplinary work

12.. This course is designed to make students aware of how to perform organiccompounds in laboratory.

13.The course includes synthesis of some derivatives and organic compounds, which will help them while working in research laboratory in future.

14. Making derivatives of organic compounds will help them in industry or while doing research in medicinal chemistry for Drug development.

15.This practical course is also designed to make student aware of green chemistry and role of green chemistry in pollution reduction.

16. The students learn how to avoid solvents and do solvent free reaction.

17. Also the work-up procedure in many experiments is made more eco-friendly to environment.

Course Outcomes:

1. Students are trained to different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction.

2. Students are made aware of safety techniques and handling of chemicals.

3. Students are made aware of carrying out different types of reactions and their workup methods.

4. This practical course is designed to make student aware of green chemistry and role of green chemistry in pollution reduction.

Department of Microbiology

Programme Outcome

A. Students will be able to acquire, articulate, retain and apply specialized language and knowledge relevant to microbiology.
B. Students will acquire and demonstrate competency in laboratory safety and in routine and specialized microbiological laboratory skills applicable to microbiological research or clinical methods, including accurately reporting observations and analysis.
C. Students will communicate scientific concepts, experimental results and analytical arguments clearly and concisely, both verbally and in writing.
D. Students will demonstrate engagement in the Microbiology discipline through involvement in research and Hands on training.

Programme Specific Outcome

- A general course emphasizing distribution, morphology and physiology of microorganisms in addition to skills in aseptic procedures, isolation and identification. This course also includes more material covering Immunology, Molecular Biology, Medical microbiology, Biochemistry, Fermentation Technology, Applied microbiology etc.
- Students will be able to communicate scientific information effectively, especially relating to microbiological organisms, and the roles of microbial organisms in ecosystem function and health-related issues
- Students will be able to collect, analyze and interpret scientific data, including developing a familiarity with microbiology laboratory techniques and safety procedures
- Students will be able to apply the scientific method as a demonstration that they understand its application furthering our knowledge of the microbial world
- Students will be able to describe fundamental principles of biology e.g., central dogma, diversity of life, inheritance and how these principles relate to microorganisms
- Students will be able to describe unique microbial genetic systems (i.e., prokaryotic genomes, lateral gene transfer, plasmid structure and function, etc.)
- Students will appreciate the biological diversity of microbial forms, and appreciate that this diversity results from evolutionary processes
- Students will gain familiarity with the unique role of microbes play in genetic modification technologies (i.e., creation of GMOs, industrial applications, gene therapy, etc.)
- Students will gain familiarity with the role of microbes in human disease, the role of microbes in issues of international health, and the human immune response to microbial infection
- Students will gain familiarity with the role of microbes in the context of ecosystem function (e.g., microbial ecology, microbiome, etc.)

Course Outcomes

Course	Outcomes
F.Y .B.Sc. Paper I Introduction to Microbiology	On successful completion of this subject the students will gain basic knowledge about Microbiology starting from history, applications and basic knowledge about the microorganisms. • Get an idea about the historical events in microbiology • Understand the diversity in microbiology • Know the scope of Microbiology • Understand the taxonomic classification of microorganisms
F.Y. B.Sc. Paper II Basic Techniques in Microbiology	• This subject will provide knowledge of Basic laboratory techniques e.g. parts of microscope, type and its principles. • Get the theoretical concepts of related stain • Understand different methods of staining techniques • Understand nutritional requirements of bacteria . • Know various methods of controls of microorganisms. • Understand concepts of growth and reproduction of bacteria • Know anatomy of prokaryotic cell • Know structural detail of eukaryotic cell • Understood various parts of cell and its importance
S.Y.B.Sc. MB-211 Bacterial Systematics and Physiology	On successful completion of this subject the students should have knowledge of the taxonomical classification of microbes and Microbial metabolism. • Develop fundamental knowledge about various biomolecules • Understand the basic concepts related to enzymes • Know various biochemical pathway • Understand the concept of microbial metabolism
S.Y.B.Sc. MB- 212 Industrial and Soil Microbiology	An introduction to capabilities of microorganisms to produce commercially important products and application of such m.o.s on commercial scale. • Aware of screening of bacteria • Understand fermentation process • Implement techniques of continuous culture To know the role of microorganisms in elemental cycles as well as in Agriculture.
S.Y.B.Sc MB-221 Bacterial Genetics	Enable the student to get sufficient knowledge in principles and applications of study of Genetics • Understand concept of genes and chromosomes Familiar with concept of mutations • Know the concepts of spontaneous mutations
S.Y.B.Sc MB-222 Air and Water Microbiology	To inculcate knowledge in role of microorganisms in eco system, methods of air sanitation ,water purification and sewage treatment.
T.Y. B.Sc. MB-331,MB-341 Medical Microbiology	To inculcate knowledge in relationship between human disease and micro organisms, pathogenicity, laboratory diagnosis and treatment methods. • Various concepts of medical microbiology • Role of international organizations such as CDC and WHO • Anatomy of human system • Various chemotherapeutic agent and their mode of action

T.Y. B.Sc. MB-332,MB-342 Microbial Genetics	On Successful Completion of this subject the students should have a sound knowledge about microbial genetics and the Recombinant DNA Techniques used in microbiological research. • Concept of central dogma of molecular biology • Process of DNA replication transcription, translation • Various method used for genetic recombination • Concept of gene regulation • Principals and applications of various molecular technique • Gene library and gene mapping**.**
T.Y. B.Sc. MB-333, Enzymology	To inculcate knowledge about Enzyme structure, function, kinetics and application in research. • Vitamin as cofactor, its role metabolism, • Regulation of enzyme • Various methods used for enzyme purification • Enzyme assays
T.Y. B.Sc. MB-343 Metabolism	On Successful Completion of this subject the students should have a sound knowledge about • Concept of bioenergetics • Anabolism and catabolism with examples • Laws of thermodynamics
T.Y. B.Sc. MB-334,MB-344 Principle of Immunology	To inculcate knowledge in human immune response towards microorganisms. • Concept related to cells and organs related to immune system • Immune response and immune mechanism • Immunological disorders • Various antigen antibody reaction, • Different immunological techniques • Concepts related to transplantation,
T.Y. B.Sc. MB-335,MB-345 Fermentation technology	Enable the student to get sufficient knowledge about • Strain improvement • Upstream and down stream process • Patents • Application of m.o.s capable of producing commercially important products on industrial scale.
T.Y. B.Sc. MB-336 Food and Dairy Microbiology	Enable the student to get sufficient knowledge in relationship between food and microbes, techniques used in food processing and Dairy industry. • Milk microbiology- Preservation technique used in milk industry, Check quality of milk • Food microbiology –Preservation technique used in food industries, • Microbial food borne illnesses.
T.Y. B.Sc. MB-346 Environmental and Agricultural Microbiology	To inculcate knowledge in role of microorganisms in eco system and impact created by microbes in agricultural development • Concepts related to Plant pathology • Soil microbiology and xenobiotics • Microbial waste treatment methods

F.Y,S.Y,T.Y. B.Sc. Practicals	The aim of this is to deliver practical knowledge and the implementation of the concepts studied. • To know SOPs of various laboratory instrument. • Develop skill to stain parts of bacterial cell • Detect fermentation product • Isolate mutants • Screen bacteria for organic acid and antibiotics • Perform MIC of antibiotics • Various techniques to estimate size of microbes Isolation of bacteriophage and endophytic microorganism • Check quality of milk • Handling of blood and body fluids • UV-survival curve • Enzyme production and determination of its activity

Department of Physics

- **Course Outcomes (Cos):** Acquire knowledge and understanding of fundamental principles of modern physics relevant to problems of physics. Acquire knowledge of basic principles of Quantum Physics and Relativity. Acquire knowledge of the basic physics of a collection of particles and the emergent macroscopic properties. Apply principles of quantum and statistical physics to understand properties of semiconducting and magnetic materials Acquire knowledge of new emerging areas of Science and Technology like nanomaterials Analyze the intensity variation of light due to Polarization, interference and diffraction
- To aware of limits of classical physics & to apply the ideas in solving the problems in their parent streams
- Formulate general mechanics parameters and distinguish between central and no central forces
- Explain types of waves and interference of light
- Derive thermodynamic parameters and apply fundamental laws to solve thermodynamic problems.

T.Y.B.sc.		
Subject Code	**Subject Name**	**Subject Outcome**
91213	Mathematical Methods in Physics I	• Determine gradient, divergence and curl of scalar and vector fields, and its physical significance

91223	Solid State Physics	• Classify solids on the basis of band theory and to calculate conductivity of semiconductors • To analyze the structural properties of elemental solids
91233	Classical Mechanics	Understand basics laws of motion of Physics. The students will introduce about the forces, angular momentum and knowledge about the Constraint.The course will give knowledge about the general parameter like velocity, acceleration
91243	Atomic and Molecular Physics	.Describe the atomic spectra of one and two valance electron atoms. Explain the change in behavior of atoms in external applied electric and magnetic field. Explain rotational, vibration, electronic and Raman spectra of molecules. Describe electron spin and nuclear magnetic resonance spectroscopy and their applications.

91253	Computational Physics	. Develop a greater understanding of the issues involved in programming language design and implementation. Develop an in-depth understanding of functional, logic, array etc.
Elective Code	Renewable Energy Sources	Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems, their prospects and limitations. Know the need of renewable energy resources, historical and latest developments. Describe the use of solar energy and the various components used in the energy production with respect to applications like - heating, cooling, desalination, power generation, drying, cooking etc. Appreciate the need of Wind Energy and the various components used in energy generation and know the classifications. Understand the concept of Biomass energy resources and their classification, types of biogas Plants- applications 6. Compare Solar, Wind and bio energy systems, their prospects, Advantages and limitations. Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles.
91214	Classical Electrodynamics	Convenient description of reality is in terms of fields. These fields have a physical reality of their own, e.g., they carry energy and momentum. The fields evolve according to certain partial differential equations with appropriate initial conditions/boundary conditions. • The microscopic forces except gravity are all described in fact by a pair of electric and magnetic fields acting between charges and currents. The charges produce fields and the fields in turn affect charges. • Often, fields leave the charges to travel far in terms of waves. These waves can undergo reflection, refraction, interference and diffraction in various media. • In vacuum, these waves can travel very fast (in fact, with the maximum possible speed) and are thus relativistic. • In media, the collective behaviour of charges leads to an effective/averaged description whereby the forces are screened/enhanced/modified into something entirely new. The waves disperse in a frequency dependent way and their effective speed of propagation also becomes frequency dependent. • At temperatures much below their frequencies, these waves start behaving like particles thus leading to quantum behaviour. • When the

		reverse effect of particles behaving like waves is taken into account, one then forms stable bound states/novel phases (like atoms, molecules, solids, liquids etc.)
91224	Quantum Mechanics	• Explain fundamentals of quantum mechanics and apply to one dimensional motion of particle presentations. To solve the classical and wave mechanics problems • To formulate and solve the engineering problems on Electromagnetism Deduce Schrodinger's equations and apply it to one quantum mechanical problem. .
91234	Thermodynamics and Statistical Physics	. This course in statistical mechanics provides the basic idea of probability to the students. There are ways of calculating probability for various statistical systems of particles. Students will study basic ideology of phase space, microstate, macrostate. The objective is to apply the principles of probability in distribution of particles in various systems and to calculate thermodynamic probability. The course gives the insight of postulates of statistical physics. Students will learn the different types of statistics distribution and particles. They will learn which particles follow which statistics and why. The aim is to apply these statistical distribution in real life problems and understand their problems. .
91244 91254 91254	Nuclear Physics Electronics/Advanced Electronics Physics of Nanomaterials	Acquire knowledge in the content areas of nuclear and particle physics, focusing on concepts that are commonly assessed on the physics subject GRE. Develop and communicate analytical skills in subatomic physics. Develop familiarity with nuclear and particle physics, facilitating informed decisions as students pursue research projects, internships, careers, and graduate study. Learn about topics of interest independently, and subsequently organize and present information to each other and to a group, at an appropriate level for their target audience. To understand the operation of the various bias circuits of MOSFET and Analyze and design MOSFET bias circuits. To understand the operation and design of multistage To understand the operation and design of transformer coupled various types of power amplifier circuits. To understand the effects of negative feedback on. amplifier circuits. To analyze the different RC and LC oscillator circuits to determine the frequency of

		oscillation emphasize the importance of nanotechnology in healthcare To appreciate the role of nanotechnology in electronics Describe few methods of synthesis of nanoparticles. And Applications characterization techniques. Use and
S.Y.B. Sc.		
Subject Code	**Subject Name**	**Subject Outcome**
81211	Mathematical Methods in physics	• Determine gradient, divergence and curl of scalar and vector fields, and its physical significance
812A1	Electronics	• To understand operation of semiconductor devices. 2. To understand DC analysis and AC models of semiconductor devices. To apply concepts for the design of Regulators and Amplifiers To verify the theoretical concepts through laboratory and simulation experiments. To implement mini projects based on concept of electronics circuit concepts. • To understand number representation and conversion between different representation in digital electronic circuits. 2. To analyze logic processes and implement logical operations using combinational logic circuits. 3. To understand characteristics of memory and their classification.
: 81212	Oscillations, Waves and Sound	Properties of waves: Energy: Like moving objects, moving waves carry energy from one place to another Energy is not transmitted by the media that support waves, but by the waves themselves. EM waves from sun to earth have power of $1KW/m^2$. Plants are supported on this energy and we are supported by plants. •
81222	Optics	The main objective of this subject is to aware the students about various phenomenon of waves and optics. First unit of deals with the Fourier analysis and Fourier transformation. The second deals with the matrix method in order to explain various phenomenons. The third unit describe the Phenomenon like interference phenomenon

F.Y.B. Sc.		
Subject Code	**Subject Name**	**Subject Outcome**
Paper I	Mechanics , Heat and Thermodynamics	• The students will introduce about the forces, angular momentum and knowledge about the Constraint. The course will give knowledge about the general parameter like velocity, acceleration. The course provides the students about the knowledge of M.I.
Paper I I	Physics Principles and Applications Electromagnetic	• To apply the knowledge of mathematics, science and engineering fundamentals to model the energy conversion phenomenon. To identify and formulate power production based on the fundamentals laws of thermal engineering. To instill upon to envisage appropriate experiments related to heat engines. To investigate the effectiveness of energy conversion process in mechanical power generation for the benefit of mankind. To appreciate concepts learnt in fundamentals laws of thermodynamics from which learning ideas how to sustain in energy crisis and think beyond curriculum in the field of alternative and renewable sources of energy. To communicate effectively the concepts of internal combustion engines and try to think beyond curriculum in alternative sources of energy To understand operation of semiconductor devices.

Department of Zoology

PAPER I: FIRST TERM

ZY-101: ANIMAL SYSTEMATICS AND DIVERSITY –I

Sr. No.	Topic	Objective	Outcome
1	**Principles of classification**	To provide thorough knowledge about various animal sciences from primitive to highly evolved animal groups	Students are able to classify animals
2	**Salient features and classification up to classes**		Students are aware of Classes of King. Animalia
3	**Study of *Paramecium***		students with skills related to laboratory

		To make the students aware of applications of Zoology subject in various industries To equipped the students with skills related to laboratory as well as field based studies To make the students aware about conservation and sustainable use of biodiversity To inculcates interest and foundation for further studies in Zoology To address the socio-economical challenges related to animal sciences To facilitate students for taking up and shaping a successful career in Zoology	as well as field based studies
4	**Study of Earthworm**		Students are able to conservation and sustainable use of biodiversity
5	**Salient features and classification**		Students are interested and foundation for further studies in Zoology
6	**Salient features of Pisces,Amphibia**		students are taking up and shaping a successful career in Zoology
7	**Study of Frog**		students are able to socio-economical challenges related to animal sciences
8	**General topics:**Migration in fishes, Neoteny in Amphibia, Parental care in amphibia		students are equipped with skills related to laboratory as well as field based studies

PAPER II-FIRST TERM

ZY 102: FUNDAMENTALS OF CELL BIOLOGY

Sr. No.	Topic	Objective	Outcome
1	**Introduction to cell biology**	To provide thorough knowledge about various animal sciences from primitive to highly evolved animal groups To make the students aware of applications of Zoology subject in various industries To equipped the students with skills related to laboratory as well as field based studies To make the students aware about conservation and sustainable use of biodiversity To inculcates interest and foundation for further studies in Zoology To address the socio-economical challenges related to animal sciences	Students are able **to recognize prokaryotic (*E.coli*) and eukaryotic** Students are able to know about **cell membrane, cell organelles**. cell membrane Students are able to recognize Cell division and their significance
2	**Structure of prokaryotic (*E.coli*) and eukaryotic**		
3	**Structure and function of cell membrane**		
4	**Composition of Cytoplasm**		
5	**Study of following cell organelles with respect to structure and functions**		
6	**Nucleus**		
7	**Cell division and their significance**		
8	**Introduction to genetics**		
9	**Gene Interaction**		

10	**Lethal genes in *Mus musculu***	Students are able to know Chromosomes, Lethal genes and Multiple Alleles
11	**Multiple Alleles**	
12	**Chromosomes**	
13	**Sex-determination**	
14	**Human genetics**	

S. Y. B. Sc. Zoology

PAPER I: SEMESTER I & II

ZY-211: ANIMAL SYSTEMATICS AND DIVERSITY –III

Sr. No.	Topic	Objective	Outcome
1	**Salient features and classification upto classes** **Arthropoda, Mollusca,Echinodermata**	To provide thorough knowledge about various animal sciences from primitive to highly evolved animal groups To make the students aware of applications of Zoology subject in various industries To equipped the students with skills related to laboratory as	Students are able to classify animals Students are able to recognize mouthparts of insects animals Students are able to recognize Types of shell and foot in Mollusca, Types of pedicellariae in Echinodermata
2	**Mouthparts in Insects (Biting and chewing, Piercing and sucking,** **Chewing and lapping, Siphoning, Sponging type)** **Socio-economic life in insects** **Types of shell and foot in Mollusca : Representative examples from each class** **Types of larval forms in Echinodermata** **Types of pedicellariae in Echinodermata**		

3	**Study of Starfish**	well as field based studies To make the students aware about conservation and sustainable use of biodiversity To inculcates interest and foundation for further studies in Zoology To address the socio-economical challenges related to animal sciences To facilitate students for taking up and shaping a successful career in Zoology	
4	**Reptilia, Aves, Mammalia**		Students are able to classify
5	**Poisonous and non-poisonous snakes (Two examples each)** **Desert adaptations in reptiles** **Beak and feet modifications in birds** **Migration in birds** **Aerial adaptations in birds** **Egg laying mammals** **Aquatic mammals**		Students are able to recognize Poisonous and non-poisonous snakes, Desert adaptations, Aerial adaptations & Migration in birds
6	**Study of Scoliodon**		Students are able Study of Scoliodon

PAPER II : SEMESTER I & II ZY-212: APPLIED ZOOLOGY – I

Sr. No.	Topic	Objective	Outcome
1	**Fisheries**	Students are able Study of ZOOLOGY with applied topics like Fisheries, Agricultural Pests and their control,	
2	**Agricultural Pests and their control**		

3	**Apiculture**	Apiculture and Sericulture	Introduction to Apiculture and study of habit, habitat and nesting behavior of Apis dorsata, Apis indica, Apis florea, Apis mellifera.
4	**Sericulture**		An introduction to moriculture and sericulture, Study of different types of silk moths, their distribution and varieties of silk produced by Mulberry, Tassar, Eri and Muga silk worms in India.

Department of Botany

Program outcomes of B.Sc.

At the graduation in Science faculty a student should have

1. Acquired the knowledge with facts and figures related to various subjects in pure sciences such as Chemistry, Botany, Zoology, Microbiology, Physics Mathematics, etc.
2. Understood the basic concepts, fundamental principles and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
3. Acquired the skills in handling scientific instruments, planning and performing in laboratory experiments.
4. The skills of observations and drawing logical inferences from the scientific experiments.
5. Analysed the given scientific data critically and systematically and the ability to draw the objective conclusions.
6. Think creatively to propose novel ideas in explaining facts and figures or providing new ideas or new solutions to the problems.
7. Realised the knowledge of subjects in other faculties such as humanities, performing arts, social sciences etc. can have greatly and effectively influence which inspires in evolving new scientific theories and inventions.

8. Develop scientific outlook not only with respect to science subjects but also in all aspects related to life.
9. Developed various communication skills such as reading, listening, speaking, etc., which will help in expressing ideas and views clearly and effectively.
10. Imbibed ethical, moral and social values in personal and social life leading to highly cultured and civilised personality.
11. Developed flair by participating in various social and cultural activities voluntarily, in order to spread knowledge, creating awareness about the social evils, blind faith, etc.

Program specific outcomes of Botany

Students of Botany should know and learn about

1. Plant diversity such as algae, bryophytes, pteridophytes, gymnosperm and angiosperm which indicates the evolution of plants.
2. Environmental problems along with finding solutions.
3. Various aspects and disciplines of plant study such as plant anatomy, plant physiology, embryology, etc.
4. Different types of nutrition which are applied in growth of plants.
5. Characteristics of various plants to study identification classification and nomenclature under taxonomy and to know evolutionary relationship between different plant groups.

Course outcomes of Botany

F.Y. B.Sc.

Botany –I Plant diversity and morphology

1. To study the plant diversity i.e. various plant groups such as Algae, Fungi, Bryophytes, Pteridophytes, Gymnosperm and Angiosperms.

2. To study different morphological characters of plants such as root, stem, leaf, inflorescence, flower and its parts, seeds, etc.

Botany –II Industrial Botany

1. To study basic biotechnological processes in plants and their applications in Industry and for human beings i.e. Plant Tissue Culture, Genetic engineering, Green house Technology, Floriculture, Mushroom cultivation, Fermentation techniques.

S.Y. B.Sc. SEM I

Botany –I Taxonomy of Angiosperm and plant community

1. Plant descriptions, description of morphological and reproductive characters of plants and also identification and classification of plant families of Angiosperm.
2. A herbarium technique gives knowledge for identification of plants.
3. To understand environmental basic concept of ecology and to study plant adaptation according to different ecological conditions such as xerophytes, halophytes, mesophytes and succulents.

Botany –II Plant physiology

1. To understand basic concepts in plant physiology such as plant water relation, osmosis, imbibition, water absorption, ascent of sap, seed technology, physiology of flowering and plant growth regulators.
2. A herbarium technique gives knowledge for identification of plants

S.Y. B.Sc. SEM II

Botany –I Plant anatomy and embryology

1. To describe and understand anatomical structure of angiosperm.
2. To understand basic knowledge of embryo and embryo development and types of embryo.

Botany –II Plant Biotechnology

1. To study types of enzymes and enzyme immobilization, production of single cell protein and its economic implications.
2. To study methods of phytoremediations, rhizofilteration, phytoextraction, etc.
3. To understand basics of gene transfer in plants, its application in crop improvement and Nano-biotechnology.

Department of Statistics

Course Outcomes (COs):

Class: F.Y.B.Sc.

Sr. No.	Course	Outcomes
1	Descriptive Statistics I	After completing this course student will be able to **1) Define-** Mathematical Averages (AM,GM,HM) , Positional Averages (Median, Mode Partition values), Absolute (Range, Q.D., M.D., S.D. and Relative measures of dispersion, Moments Skewness and Kurtosis, Characteristics of Attributes. 2) **Explain-** Constructions of Diagrams and Graphs , Mathematical Averages and Positional Averages, Absolute and Relative measures of dispersion, Moments Skewness and Kurtosis, Characteristics of Attributes. 3) **Write-** Relation between AM ,GM, HM,Derivation of Median and Mode, Properties of Measures of central tendency and dispersion, First four raw and central moments, measures of Skewness and Kurtosis, concept of consistency in attributes, Yules coefficient of association, coefficient of colligation and relation between them.
2	Descriptive Statistic II	After completing the course, students will able to- **1) Define-** Types of correlation, fitting of line of Regression, Coefficient of Determination, Residual, and Unweighted and Weighted index numbers. **2) Explain-** Bivariate data, Correlation, Regression, Multiple and Partial correlation, Multiple Regression, Index Number, Types of Index Number. **3) Write-** Interpretation of r if r=1,r= -1, r= 0, Properties of correlation coefficient, Derivation of the formula for Spearman's rank correlation coefficient, Fitting of regression plan by method of least square, Properties of Multiple and Partial correlation coefficient, Price , Quantity and Value index number
3	Discrete Probability	After completing the course, students will able to- **1) Define-** Sample space (Finite and countable infinite), Power set, Axiomatic definition of probability, Probability Mass function (pmf), Cumulative distribution function (cdf). 2) **Explain-** Random experiment, events and types of events, Conditional Probability and Independence of events. 3) **Write-** Examples on sample space, simple examples on probability based on permutation and combination, Theorems on probability, Properties of cdf.
4	Discrete Probability Distribution	After completing the course, students will able to- **1) Define-** Random Variable**,** Expectation of random variable , Mean, Variance, Raw and central moments based on expectation of random variable, pgf, Bernoulli

		, Binomial, Discrete Uniform, Hypergeometric distributions, Poisson distribution, Geometric Distribution, Bivariate discrete random variable. **2) Explain-** Results on expectation of random variable, Mean and variance by using pgf. **3) Write-** Properties of pgf, Probability mass function-Mean-Variance-moments-cdf for standard discrete probability distribution, Recurrence relation, concept of marginal and conditional probability, Theorems on expectation, conditional mean and conditional variance.

Class: S.Y.B.Sc.

Sr. No.	Course	Outcomes
1	Discrete Probability Distribution, Time Series And R-Software	After completing the course, students will able to- 1. Learn Negative Binomial Distribution, Multinomial Distribution, Truncated Distribution, with their Mean, Variance .moments and other properties**.** 2. Learn the Meaning and need of time series analysis. Do Measurement of trend 3. Students will get knowledge of various basic and logical statements in R-Software. Students are able to represent data by Diagrams and Graphs using R Software. 4. Students are able to prepare a programs on Descriptive Statistics, Probability Distributions by using R-software.
2	Continuous Probability Distribution	After completing the course, students will able to- 1. Learn the basic concepts of Statistics. 2. Understand concept of continuous distributions with real life situations 3. Learn Uniform, Exponential, Normal & Gamma Distributions. 4**.** Compute mean, mode, variance, moments, cumulants for all Distributions 5. Learn properties of normal curve 6. Compute Distribution of X2

3	Statistical Methods and use of R-Software	After completing this course student will be able to 1. Learn basic concepts of multiple linear Regression Model 2. Learn Testing of Hypothesis 3. Understand Large Sample Tests 4. Understand the need of vital statistics and concept of mortality and fertility 5. Solve examples on Demography 6. Understand Queueing Models and Solve examples.
4	Sampling distribution And inference	After completing this course student will be able to **1.** Learn Exact Sampling Distributions **2.** Understand Chi-Square distribution, Student's t- distribution, Snedecores F distribution **3.** Know the relations among the different distributions **4.** Learn Testing of Hypothesis **5.** Understand Large Sample Tests **6.** Learn Testing of Hypothesis **7.** Understand Small Sample Tests

Department of Mathematics

Course Outcomes (COs):

Class: F.Y.B.Sc.

Sr. No.	Course	Outcomes
1	Sem I-Algebra Sem.II-Geometry	After completing this course student will be able to 1. apply basic concept of sets, relations, functions, type of functions 2. Solve various problems on properties of integers and use the basic concepts of divisibility, congruence and their applications in basic algebra. 3. apply factor theorem, remainder theorem to solve problems on polynomials and by using given relations between roots he will find the roots of polynomial. 4. apply basic properties of complex number ,De-Moivre's theorem, region in complex plane. 5. Solve the problems of lines in three dimension, planes,

		spheres, and cylinders and how geometry is related to algebra by using their algebraic equations.
2	Sem.I-Calculus-I Sem.II-Calculus-II	After completing the course, students will able to- 1. Identify algebraic and order properties of real numbers. 2. Identify and apply the function properties of real number system such as the completeness property 3. Verify the values of limit of a function at a point using the definition of a limit and continuity of functions. 4. Identify and apply the properties of sequences of function ,it's limits, convergent sequences. 5. Find derivatives of a function at a point and derivatives of inverse function. 6. Identify and apply the intermediate value theorem, Mean value theorem and Hospital's rule. 7. Identify types of differential equations and solve differential equations such as Exact, homogeneous, non-homogeneous, and linear and Bernoulli differential equations etc.

Class: S.Y.B.Sc.

Sr. No.	Course	Outcomes
1	Multivariable Calculus I	After completing the course, students will able to- 1. Students learn analysis of multivariable functions, continuity and differentiability. 2. learn the concepts of multiple integrals and their Application to area and volumes
2	Laplace Transforms and Fourier Series	After completing this course student will be able to 1. Learn the methods and properties of Laplace transform and Inverse Laplace transform; apply them to solve Linear Differential equations. 2. Apply the fundamental concepts of Fourier series, Fourier Sine series, Fourier Cosine series to find series representation of irrational numbers.
3	Linear Algebra	After completing this course student will be able to 1. Use the concept of basis and dimension of vector spaces linear dependence and linear independence, to solve problems. 2. Use the concept of inner product spaces to find norm of vectors, distance between vectors, and check the orthogonality of vectors, to find the orthogonal and orthonormal basis. 3. Apply the properties of linear transformations to linearity of transformations, kernel and rank of linear

		transformations, inverse transformations to solve the problems of matrix transformations, change of basis.
4	Numerical Methods and It's Applications	After completing this course student will be able to 1. Round-off given number. Calculate absolute, relative and percentage error. 2. Solve the algebraic and transcendental equations by Numerical Methods 3. Use the least square curve fitting procedure to fit straight line and non linear curves 4. Use the finite difference operators, interpolation formulae. 5. Use the concept of numerical integration. 6. Solve the first order ordinary differential equations by Numerical Methods.

DEPARTMENT OF PSYCHOLOGY

Programme Outcomes (PO'S)

1. Able to understand basic concepts of psychology.
2. Understand the human personal & social behaviours.
3. Awareness of personal, Family &social well being.
4. Introduction to various models of abnormality.
5. Able to evaluate lenitive process, learning & memory of individual.

Programme Specific Outcomes (PSO'S)

1. Enhancement of stress management of skills.
2. Able to measure attitude, aptitude, interest, adjustment skill etc. Within the people.
3. To interpretation of data & make research.
4. Illustration of mental disorder & treatment.
5. Use of psychological test & experiment.
6. Use of motivation theory at work place.

Course Outcomes (CO'S)

F.Y.B.A.

SEM – 1 Foundations of Psychology (1227)

1	Understand the basic psychological processes & their applications in day to day life.

2	Develop the ability to evaluation learning & memory of a life.
3	Understand the personality & intelligence of the individuals by developing their psychological process & abstract potentials.
4	Understand the importance of motivation & emotional of the individual.

SEM -2 Introduction to Social Psychology (1227)

1	To understand the basics of social psychology.
2	To understand the nature of self, attitude & prejudice of the individual
3	Assess the interactional processes, love & aggression in our day to day life.
4	Understanding the social perception.

S.Y.B.A. G II SOCIAL PSYCHOLOGY (2227)

1	To understand the social behaviour.
2	To understand self & how to develop it.
3	Familiarize student with group behaviour.
4	To understand improving self esteem.
5	To importance of close relationship.
6	To understand the leadership & its characteristics.
7	To able to understand aggression how to control it.

S.Y.B.A. S - 1 ABNORMAL PSYCHOLOGY ( )

1	To understand the criteria o abnormal behaviour
2	To acquaint student with the recent classification of abnormality.
3	Understand various perspective of psychopathology.

4	To student expecte to aquire knowledge of causes, symptoms and treatment of various psychological disorder.
5	To learned causes and treatment of various disorder.
6	Knowing about the nature, types & nature types & perceptive of anxity and disorders of childhood and adolscene

S.Y.B.A. S - 2 DEVLOPMENT PSYCHOLOGY (2229)

1	Undersatand influences of various factors on development
2	To under stand basic concept of human development forces
3	To understand birth and birth complication
4	To understand development of languge
5	Able to understand cognitive development process
6	To learn all stages of life span and understand its good and bad impact on life

T.Y.B.A. G- 3 INDUSTRIAL AND ORGANZATIONAL (3227)

1	To learn about industrial and organizational psychology.
2	To able to understand selection and training programme.
3	To able to learn evaluating job performance and application
4	To understand motivation at the workplace
5	To understand leadership, leadership qualities and function of leaders of industrial psychology
6	To learn new concept ‘engineering psychology’ for easier work for workers

T.Y.B.A. S- 3 SCIENTIFIC RESEARCH AND EXPERIMENTAL PSYCHOLOGY (3228)

1	To acquaint the student with the bascic concept of experimental psychology and research methodology.
2	To devlop the spirit of scientific inquiry in the student
3	To help them generate ideas of research, as well as devlop hypothesis and opretional definition for variable
4	To help students understand the basic steps in scientific research.
5	To equip the students we the basic information and knowledge about test administration and scoring and interpretation of the obtaind results.
6	To enable the students to undertake and independent small-scale research

T.Y.B.A. S-4 PSYCHOLOGY PRACTICAL : TESTS AND EXPERIMENTS (3229)

1	To familiarize the student with the use of elementary statical techniques
2	To give practical experience to the student in administering and scoring psychological tests and interpreting the scores
3	To acquaint the student with the basic procedure and design of psychology experiment
4	To encourage and guide the students to undertake a small-scale research project
5	To encourage student to learn practical application through study tour and visit