

**ADIWASI SATPUDA SHIKSHAN PRASARAK MANDAL, DHADGAON SANCHALIT,
MAHARAJ JANARDAN POHARYA VALVI ARTS, COMMERCE AND
SHRI VISHNU KRISHNA KULKARNI SCIENCE COLLEGE, DHADGAON,
DIST. NANDURBAR,[M.S.]**

2.6.1 : Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on the website and attainment of POs and COs are evaluated.

- ❖ **Programme Outcomes (PO's)**
- ❖ **Programme Specific Outcomes (PSO's)**
- ❖ **Course Outcomes (CO's)**

UG Programme & Courses

Arts	Science
<u>Defense Studies</u>	<u>Chemistry</u>
<u>Sociology</u>	<u>Mathematics</u>
<u>Political Science</u>	<u>Zoology</u>
<u>Economics</u>	<u>Botany</u>
<u>English</u>	<u>Physics</u>
<u>Geography</u>	

➤ Department of English

➤ Programme Outcomes: B.A. English:-

After successful completion of three-year degree program in English a student should be able to

Sr. No.	Programme Outcomes (PO's)
PO 1	The papers framed for this Program are in accordance with the norms of CBCS pattern.
PO 2	Discipline specific papers will acquaint the students with the rich legacy of English Literature and the contribution of legendary writers to the development of English Literature.
PO 3	The papers of skill and ability enhancement are framed not only to orient the students on the use of language but how to use the language creatively and professionally.
PO 4	The paper of Project writing will inculcate the skills of explanation, interpretation and visualization in the students.
PO 5	The Paper of Compulsory English is specifically framed from the viewpoint of value education which is the basis of quality life.
PO 6	Selection of contents in all the courses will help the students to comprehend the worldly wisdom and commercial perception which will ultimately lead them to be successful and enjoy quality life.
PO 7	The special papers will open up traditional job opportunities for the students but the papers of skill and ability enhancement will open up corporate, govt. and private sectors for the students of English literature.

➤ Programme Specific Outcomes: B.A. English: -

Sr. No.	Programme Specific Outcomes (PSO's)
PSO 1	Use correct English in oral as well as written form.
PSO 2	Inculcate human values for one's transformation of behavior.
PSO 3	Interpret the literary works by critical analysis.
PSO 4	Compare literary works of the great philosophers using their logic and literary capacity.
PSO 5	Use correct English in oral as well as written form.

➤ Course Outcomes: B. A. English: -

Sr. No.	Class	Course	Course Outcomes
CO 1	F.Y.B.A	Compulsory English (Silver Lining)	<ul style="list-style-type: none"> •The course will introduce the basic forms of literature to the students. •The course will develop the liking of reading in the students. •The course will inspire students to develop their creative ability. •Consequently, the course will develop reading skills and creative and expressive ability of the students.
CO 2	F.Y.B.A	Optional English	<ul style="list-style-type: none"> •To develop the ability of students to comprehend written texts •To inculcate amongst students moral and human values •To make the students aware of the aesthetic pleasure of literature •To introduce to the students the basic forms of poetry •To create interest among students for literature
CO 3	S.Y.B.A	16th and 17th Century English	<ul style="list-style-type: none"> •To acquaint the students with the major literary trends and tendencies and prominent writers of the 16th and 17th Century English Literature.

		Literature (DSE 1A&B)	<ul style="list-style-type: none"> •To make the students aware about the literary history, salient features and sociocultural background of the period. •To help the students to grasp the content and critically appreciate the prescribed texts. • To inculcate amongst students a liking for the Elizabethan and Post-Shakespearean literature.
CO 4	S.Y.B.A	18th and 19th Century English Literature (DSE 2A&B)	<ul style="list-style-type: none"> •To impart basic ideas about the 18th and 19th Century English Literature with special reference to Poetry and Novel. •To make the students aware about the literary history, salient features, socio political and cultural background of the Romantic and Victorian age •To help the students to grasp the content and critically appreciate the prescribed Texts. •To inculcate amongst students a liking for Romantic and Victorian literature.
CO 6	S.Y.B.A	SEC-I: English for Competitive Examinations	<ul style="list-style-type: none"> •To enable students to prepare for the competitive exams of various kinds especially meant for testing ability in English language. •To introduce students with the common question types asked in competitive examinations concerning English-grammar, vocabulary, comprehension, and other significant topics. •To encourage students to appear and prepare for the competitive exams. •To help the students to overcome the fear about English as a compulsory subject in various competitive exams.
CO 7	T.Y.B.A	20th Century English Literature (S-3)	<ul style="list-style-type: none"> •To acquaint the students with the growth of Indian drama and novel in English during the 20th century. •To enable the students to evaluate, analyze, appreciate and criticize drama and novels prescribed. •To acquaint the students with the social, political and cultural background and literary movements of the century.

CO 8	T.Y.B.A	DSE-4 The Study of English Language (S-4)	<ul style="list-style-type: none"> •To introduce the students to the properties and functions of language. o •To inculcate phonological competence among students. •To acquaint the students with English grammatical forms and functions. •To acquaint the students with morphological concepts and processes. •To introduce the students to the basic concepts in syntactic and semantic levels of language.
CO 9	T.Y.B.A	G-III	<ul style="list-style-type: none"> •To acquaint the students with the origin of drama and dramatic art. •To introduce the students to the aspects and genres of drama. •To enable the students to trace the development of English drama. •To inculcate amongst the students the competence to study drama systematically. • To acquaint the students with representative English dramatists.
CO 10	F.Y.B.Sc	AEC	<ul style="list-style-type: none"> •To introduce to the students with writing and reading skills •To acquaint the students with the use of the English Language through different means. • To acquaint the students with the creative use of English Language.

➤ Department of Geography

➤ Programme Outcomes: B.A. Geography:-

After successful completion of three-year degree program in geography a student should be able to

Sr. No	Programme Outcomes (PO's)
PO 1	To Acquaint the students with basics of scale, Map projection and cartographic.
PO 2	Techniques and surveying to proper guidance to students for Competitive examination.
PO 3	The paper of Physical geography of Maharashtra Specifically framed to acquire knowledge of our states and within various resources to students.
PO 4	The paper of Practical Geography specifically framed to acquaint the students with basics of scale map projection and Cartographic techniques.
PO 5	The paper of Human and Economic Geography was specifically framed to acquaint with knowledge of the economic realm in the world as well as in India and various races of Mankind in the world.
PO 6	The paper of SEC (Both Semester) Specifically framed to Students will gate knowledge about various approaches and model of regional planning and development
PO 7	To understand the principle of Remote sensing.

➤ Programme Specific Outcomes: B.A. Geography: -

Sr. No.	Programme Specific Outcomes (PSO's)
PSO 1	To Study theory and models of economic Geography
PSO 2	to explain the trade and transport activities in world
PSO 3	To enable the students use scale map and cartographic techniques
PSO 4	To learn basic of GPS based survey

> **Course Outcomes: B.A. Geography: -**

Sr.No	Class	Course	Course Outcomes
CO 1	F.Y.B.A	Physical Geography	<ul style="list-style-type: none"> •To study the Latitudes and Longitudes measurement of time. •To understand the effect of rotation of the earth •To understand Interior structure of the Earth.
CO 2	SYBA (DSC 1C & 1D)	General Cartography & Human Geography	<ul style="list-style-type: none"> •To acquaint the knowledge about practical and theoretical understand of cartographical concepts. •To acquaint yourself with knowledge of types of races in the world. •To study various types of settlement patterns.
CO 3	SYBA (9DSE 1A & 1B)	Geography of Tourism & Geography of India	<ul style="list-style-type: none"> •To know the importance of sustainable tourism. •To understand the various geo-tourism. • To make the students able to understand the geographical personality of India.
CO 4	SYBA (DSE 2 A & 2B)	Practical Geography	<ul style="list-style-type: none"> •To acquaint the students with basics of scale map projection and cartographic techniques. •To acquaint the students with principles of surveying, it's important and utility in geographical studies. •To know how to draw the map on various scale
CO 5	SYBA	SEC- Skill Enhancement Course	<ul style="list-style-type: none"> •Students will become well aware about regional planning and development. •Students will get knowledge about various approaches and models of regional planning and development. •To understand the principle of remote sensing. •To acquaint students with fundamental concepts of aerial

			photography.
CO 6	TYBA	Population and Political Geography	<ul style="list-style-type: none"> •To understand the recent problems of population in the world as well as nations. •To familiarize the students with different theories of population growth. •To understand the various States boundaries and Theories related boundaries.

➤ **Department of History**

➤ **Programme Outcomes: B.A. History :-**

After successful completion of three-year degree program in History a student should be able to-

Sr. No.	Programme Outcomes (PO's)
PO 1	To introduce various perspectives of the Indian Freedom movement.
PO 2	To develop the Spirit of Nationalism Among Students.
PO 3	To create and enhance interest about regional History among the students.
PO 4	Useful for the Preparation of the Competitive Examination.

➤ Programme Specific Outcomes: B.A. History: -

Sr. No.	Programme Specific Outcomes (PSO's)
PSO1	To Understand the basic concepts of historical movements , development of cultural civilization
PSO2	To analyze the economic importance of various sectors like Agriculture , Industry and Service sector of different administration levels.
PSO3	To understand, develop and demonstrate academic proficiency in the subfields of political theory.
PSO4	To promote values such as sustainable development, Optimum utilization of resources, patriotism, respecting the ideals of freedom struggle and responsible citizenship, political participation and socialization.

> Course Outcomes: B.A. History: -

Sr. No	Class	Course	Course Outcomes
CO 1	F.Y.B.A	History of India (1857-1950)	<ul style="list-style-type: none"> •To introduce various perspectives of the Indian Freedom Movement. •To develop the spirit of Nationalism among students. •To bring awareness among the students as responsible.
CO 2	SYBA DSC 2	History of the Marathas (1605-1750)	<ul style="list-style-type: none"> •To Great and enhance interest about Regional History among the Students. •To acknowledge students how Shivaji Maharaj created the Empire in adverse circumstances. •To Motivate Students for the Research work of Maratha History.
CO 3	SYBA DSE1A	History of U.S.A. (1776-1945)	<ul style="list-style-type: none"> • To understand the importance of America (USA) in world history. • To Study the foreign policy of America (USA) • To Study and the Role of America between two world wars.
CO 4	SYBA DSE2A	History of Ancient India (B.C.3000- 1206)	<ul style="list-style-type: none"> •To acquaint the students with different sources of Ancient Indian History. •To enable the students to understand the political, Socio-Economic and Cultural Developments in the Periods under study and appreciate the rich Cultural Heritage in India. •To Survey sources of History of Ancient India.
CO 5	SYBA SEC	Sem III, Research Methodology in History. Sem. IV An Introduction to Archives in India	<ul style="list-style-type: none"> •The paper is designed to provide an adequate conceptual base. •Help Research in terms of formulating hypotheses and develop broad frames of interaction with other social sciences and attain a certain level of Interdisciplinary Approach. •To introduce the importance of Archives in Study of History.

			<ul style="list-style-type: none"> •To create awareness to conserve the historical Records in their Local Arias
CO 6	TYBA Gen3	History of Modern World (1789- 1945)	<ul style="list-style-type: none"> •To introduce the Students to the Concept and Nature of Modern world History. •It will create patriotism and European Nationalis mamong the Students. •Develop an interest in Students to study history as a discipline.
CO 7	TYBA Spl3	Expansion and Fall of the Maratha Power (1707-1818)	<ul style="list-style-type: none"> •To Great and enhance interest about Regional History among the Students. •To Motivate Students for the Research work of Maratha History. •Useful for the Preparation of the CompetitiveExaminations.
CO 8	TYBA Spl4	History of Sultan & History of the Mughals 1206- 1707	<ul style="list-style-type: none"> •To Developed the skill and opportunities among the Students •Syllabus covers competitive examinations (UPSC, MPSC, NET, SET, Railway Board and Staff Selection etc.) •Syllabus related to Tour and excursion visit and Report writing.

➤ Department of Defense Studies

➤ Programme Outcomes: B.A. Defense Studies:-

After successful completion of three-year degree program in Defense Studies a student should be able to

Sr. No.	Programme Outcomes (PO's)
PO 1	Become knowledgeable in the subject of National security and apply the principles of the same to the requirements of the Uniformed forces.
PO 2	Understand and Appreciate Professional Ethics, Community Living and Nation Building Initiatives.
PO 3	Understanding and giving solutions to varied Security problems.
PO 4	Able to identify and adopt compliance formalities in National Administration
PO 5	Demonstrate ability to adapt to a rapidly changing environment by learning new skills and new competencies for application thereof.
PO 6	Acquire the spirit of compassion, kinship and commitment for National Harmony
PO 7	Progressively adopt and learn continuously through ICT modules
PO 8	Enable the students to acquire professional qualification at the earliest.
PO 9	Prepare young and Capable minds to serve the nation in Army, Navy and Airforce.

➤ Programme Specific Outcomes: B.A. Defense Studies:-

Sr. No.	Programme Specific Outcomes (PSO's)
PSO1	Inculcating analytical heart and mind to manage day- to- day National issues
PSO2	Solve the practical problems in the area of National Security conformity with human, environment Political, etc
PSO3	Understand the problems of International issues and inculcate in required skills for conflict management.
PSO4	Be an active member of a Uniformed force.

> **Course Outcomes: B.A. Defense Studies:-**

Sr. No	Class	Course	Course Outcomes
CO 1	F.Y.B.A	Indian Art of War	Student familiar with evolution of art of warfare in India; Student learns and understands the Strategy, tactics, application of principles of war and causes of defeat and victory of various Indian, Mughal, Maratha and Sikh Generals. Student appreciates and understands evolutionary changes in the art and science of war in India through ages.
CO 2	SYBA DSC 2	India's National Security	Students understand that national security is the highest political goal of all states. Students understand the approaches adopted by states differ based on their individual power status, and the prevailing political and strategic dynamics at regional and global level. Students acquire the threats to a state, typology of threats, national power and its elements, doctrinal orientation for security; its linkages with foreign policy and defense policy.
CO 3	TYBA Gen	International Securities Issues	Students understand that national security is the highest political goal of all states. Students understand the approaches adopted by states differ based on their individual power status, and the prevailing political and strategic dynamics at regional and global level. Students acquire the threats to a state, typology of threats, national power and its elements, doctrinal orientation for security; its linkages with foreign policy and defense policy.
CO 4	SYBA DSC 2	India's National Security	Students understand that national security is the highest political goal of all states. Students understand the approaches adopted by states differ based on their individual power status, and the prevailing political and strategic dynamics at regional and global level. Students acquire the threats to a state, typology of threats, national power and its elements, doctrinal orientation for security; its linkages with foreign policy and defense policy.

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CO 3	TYBA Gen	International Securities Issues	Students understand that national security is the highest political goal of all states. Students understand the approaches adopted by states differ based on their individual power status, and the prevailing political and strategic dynamics at regional and global level. Students acquire the threats to a state, typology of threats, national power and its elements, doctrinal orientation for security; its linkages with foreign policy and defense policy. the concepts and applications of Space and Ballistic Missile Defence (BMD) in Warfare.
CO 7	TYBA Spe-4	Geo Strategy	Students understand the definition, meaning and distinguish basic concepts of Geo Strategy. Students understand various types of geo strategy and its various typologies, techniques and characteristics. Student understands and grasp the concept and theories of geo strategy in details

> Course Outcomes: B. A. Political Science -

Sr. No.	Class	Course	Course Outcomes
			<ul style="list-style-type: none"> •This paper is a basic introduction to the process, concept and working of the Indian constitution. The Indian Constitution is a social document. •This paper acquaints students with the constitution, design of state structure institutions and their actual working overtime. •The paper traces the embodiment of some of these conflicts in constitutional provisions and shows how this has played out in political practices in further encouraging study of state in situation in their mutual interaction with the larger extra constitutional environment & recent trends in Indian democracy.
CO 2	S.Y.B.A Sem-III	(DSC 1 C) Introduction to Administration of Maharashtra	<ul style="list-style-type: none"> •This paper is essential for students of any faculty – discipline. Because it is not only useful for G.K. but also necessary to admire the history and administration of our region. •We should learn about how our administration is going on, what is the role of administrator of all internal sections, features of gov, internal branches of administration, structure of govt etc. This paper will help to create further administrators. •In this context, at UG level students should admire proper understanding methodology and hard work for quality.

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➤ **Course Outcomes: B.A. Economics: -**

Sr. No.	Class	Course	Course Outcomes
CO 1	F.Y.B.A	(G-1:GENERAL ECONOMICS) - Part – I Paper code Eco G 101(A): Principles of Micro economics-1	<ul style="list-style-type: none"> •Introduced the students to the basic principles of Microeconomic theory. •To introduced the student’s behavior of consumer, producer in Economy, Price determination in Market and also factor pricing. •How to microeconomic concepts can be applied to analyze real life situations
CO 2	S.Y.B.A	Indian Economy Since 1980- I&II DSC Eco 231 C & DSC Eco 241 D	<ul style="list-style-type: none"> •To enable students to have an understanding of the various issues of the Indian Economy. •To develop the analyzing capability in the context of current Indian Economic Problems. •To enable the students to appear in the MPSC, UPSC and other competitive Examinations.
CO 5	T.Y.B.A	DSC -1 (E & F) Eco-351 & 361 Indian Economy	<ul style="list-style-type: none"> •To enable students to have an understanding of the various issues of the Indian Economy.

➤ Department of Chemistry

➤ Programme Specific Outcomes: B.Sc. Chemistry:-

Sr. No.	Programme Specific Outcomes (PSO's)
PSO 1	Developed students with the skills required to succeed in graduate school, the chemical industry or professional school.
PSO 2	To expose the students to a breadth of experimental techniques using modern instrumentation.
PSO 3	The student will understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.
PSO 4	The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.
PSO 5	The student will learn the laboratory skills needed to design, safely conduct and interpret chemical research.
PSO 6	The student will acquire a foundation of chemistry of sufficient breadth and depth to enable them to understand and critically interpret the primary chemical literature.

➤ **Course Outcomes: B.Sc. Chemistry: -**

Sr. No.	Class	Course	Course Outcomes
CO 1	F.Y.B.Sc Sem-I	CH-101: Physical and Inorganic Chemistry	<ul style="list-style-type: none"> •To expose & develop interest in the field of chemistry. •To develop ability & to acquire the knowledge of terms, facts concept processes techniques & principles of subject. <p>To understand the fundamental principle and chemical analysis</p>
CO 2	F.Y.B.Sc Sem-I	CH-102: Organic and Inorganic Chemistry	<ul style="list-style-type: none"> •To develop skills required in chemistry such as the proper handling of apparatus & chemical analysis •To develop ability to apply the knowledge of contents of principles of chemistry
CO 3	F.Y.B.Sc Sem-II	CH-201: Physical and Inorganic Chemistry	<ul style="list-style-type: none"> •To develop problem solving skills in students. •To develop proper aptitude towards the subject. •To develop the ability to apply the knowledge of contents of principles of chemistry.
CO 4	F.Y.B.Sc Sem-II	CH-202: Organic and Inorganic Chemistry	<ul style="list-style-type: none"> •Determine analyses and evaluate the interpretation ships involved in chemistry. •Develop thirst of chemical knowledge, become flexible and persistence learners and appreciate the need for lifelong learning.

CO 5	S.Y.B.Sc Sem-III	CH-301: Physical and Inorganic Chemistry	<ul style="list-style-type: none"> •Know the qualitative properties of solution, the depression in freezing point, elevation in boiling point and osmotic pressure. Calculate molar and normal solution of various concentrations. •Explains the application of colligative properties in determining molecular mass. •Know the qualitative properties of solution, the depression in freezing point, elevation in boiling point and osmotic pressure. •Compares the general characteristics electronic configuration of lanthanides and actinides, uses of lanthanides and actinides.
CO 6	S.Y.B.Sc Sem-III	CH-302: Organic and Inorganic Chemistry	<ul style="list-style-type: none"> •This course gives quantitative ideas about the synthesis, properties and uses of such heterocyclic compounds like pyrrole, pyridine quinoline, thiophene, furan etc.. Different methods for the preparation of important Hetero cycles and their important reactions. Aromaticity, Huckel's rule and its applications

			<ul style="list-style-type: none"> •Explains the different types of structural and stereoisomers CO2 Represent organic molecules by Fischer, Flying wedge, Sawhorse and Newman projection formulas, Conformational isomerism of ethane, n-butane, cyclohexane, Conformational analysis of 1,4 cis and trans disubstituted cyclohexane. •Explains the theories of acids and bases. Different solvents and solubility. Hard and soft acids and bases: definitions, Pearson HSAB concept, theories of Hardness and softness, application and limitation of HSAB concepts.
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CO 7	S.Y.B.Sc Sem-III	CH-303 Chemistry Practical	<ul style="list-style-type: none"> •Determine the miscibility temperature of phenol– water system •Experimental demonstration of Conductometric and Potentiometric titrations of strong acid against strong base, weak acid against strong base. •Simple Organic and Inorganic derivatives preparations
CO 8	S.Y.B.Sc Sem-III	CH-304 Basic Analytical Chemistry	<ul style="list-style-type: none"> •Develops accuracy and precision in doing experiments, understands the different errors and methods for minimizing errors. Explanation of MSDS. Explain significant figures, absolute error, relative error, mean, median, Give the theory behind the qualitative and quantitative analysis conducted in the laboratory. Study the importance of safety and security, responsibility types of hazards and risk in chemical laboratories. Understand the use of personal protective and other safety equipment, handling of chemical in laboratory. •Understand the route of exploration for toxic chemicals. Learn good laboratory practices and its applications. •Students are enabling to aware about PH, POH, derivation of Henderson’s equation, conduct acid base titrations, Different indicators used in titrations, •Complexometric titrations, Applications of titrations <p>Students are able to learn about Classification of chromatography, Mobile phase and stationary phase, Study the instrumentation, sample injection system, columns for HPLC and GC, Solvent treatment system and choice of mobile phase. To give an extended knowledge about chromatographic</p>

CO 9	S.Y.B.Sc Sem-IV	CH-401: Physical and Inorganic Chemistry	<ul style="list-style-type: none"> •Free energy and equilibrium, Gibbs and Helmholtz energies, spontaneous and non spontaneous reactions, changes in enthalpy, Entropy and free energy of reactions, Derivations of Clausius and Celsius chaperon equations. •Electrochemistry discussed electrical properties of ionic solutions. Different types of cells and their formulations, applications. Solve the cell reactions and calculate cell EMF. •Double salts and coordination compounds, coordination complexes and complex ions, coordination number, Unidentate, bidentate and polydentate ligands, chelating ligand and chelates, physical methods used in study of complex, Nomenclature of coordination compounds. •Theoretical knowledge about metals, non metals and semiconductors. Understand the p-type semiconductor and n-type semiconductor. Their preparations and uses.
CO 10	S.Y.B.Sc Sem-IV	CH-402: Organic and Inorganic Chemistry	<ul style="list-style-type: none"> •Synthesis of organic reaction itself involves a large part of organic chemistry. This is called synthetic organic chemistry. This chapter involves different synthetic reagents for synthesis of malonic ester and Acetoacetic ester. •Organometallic compounds are very important in biological bodies like hemoglobin, •Chlorophylls, Vitamin B12 and also, they can be used as chemical reagents. The course discussed the synthesis and properties of these organometallics of Zinc, Magnesium, Lithium and Copper.

			<ul style="list-style-type: none"> •To understand different theories like MOT, VBT, CFT, LCAO, Compare MO and VB theory, Know the meaning of various terms involved in coordination Chemistry, To understand Werner's formulation of complexes and identify the types of valences, Know the limitations of VBT, Know the shapes of d-orbitals and degeneracy of d-orbitals, Explain MO Theory and draw the MO diagrams for H₂, He₂, B₂, N₂, O₂, CO and NO
CO 11	S.Y.B.Sc Sem-IV	CH-403: Chemistry Practical	<ul style="list-style-type: none"> • Experiments based on Gravimetric and Colorimetric analysis. • Gravimetric estimation of Barium, Sulfate, Calcium using silica crucible • Organic qualitative analysis in small quantities helps in type determination and reduces the consumption of chemicals. • Determine the physical constants like boiling point and melting point of organic compounds. •Recrystallisation of organic compounds from alcohol and water. •Identify the organic compounds. •Paper chromatography
CO 12	S.Y.B.Sc Sem-IV	CH-404: Advance Analytical Chemistry	<ul style="list-style-type: none"> •To understand redox reaction •Complexometric titrations & its applications •Introduction of gravimetric analysis
CO 13	T.Y.B.Sc Sem-V	CH -351 Physical Chemistry	<ul style="list-style-type: none"> •To orient and acquaint the students towards the basic concepts of Quantum Chemistry •To acquire knowledge about rates of chemical reactions and distinguishing the reaction of different order and their characteristics. •To understand the basic principles of phase rules and phase diagrams. •To learn the underlying principles of electrode reactions,

			electrochemical cells and applications of EMF.
CO 14	T.Y.B.Sc Sem-V	CH -352 Inorganic Chemistry	<ul style="list-style-type: none"> •To describe the VSEPR theory to predict the shape of molecules from electron pairs. • To describe the bonding in simple compounds using VBT.

			<ul style="list-style-type: none"> •To describe the principles of VBT to predict hybridization of orbitals. •To understand how CFT explains electronic structure, color and magnetic properties of coordination compounds. • To introduce the basic principles of MOT and electronic geometry of molecules.
CO 15	T.Y.B.Sc Sem-V	CH -353 Organic Chemistry	<ul style="list-style-type: none"> •Synthesis of organic reaction itself involves a large part of organic chemistry. This is called synthetic organic chemistry. This is discussed in a simple way for some simple molecules to the students. This includes fragmentation and retrosynthetic analysis and also finding synthon or reactive starting molecules of a target molecule. •Pericyclic reactions are used in a vast way in nature and also by organic chemists. •This course gives the student the theoretical basis of this kind of reaction and also helps them to find a way to carry out these types of reactions. the reactivity and stability of an organic molecule based on structure, including conformation and stereochemistry an understanding of nucleophiles, electrophiles, electronegativity, and resonance the prediction of mechanisms for organic reactions •How to use their understanding of organic mechanisms to predict the outcome of reactions •How to design syntheses of organic molecules •How to determine the structure of organic molecules using IR and NMR spectroscopic techniques

CO 16	T.Y.B.Sc Sem-V	CH- 354 Analytical Chemistry	<ul style="list-style-type: none"> •The course gives an introduction to inorganic and organic analytical chemistry, including basic analytical methods. •Explain the theoretical principles and important applications of classical analytical methods. •Explains all theoretical principles of various separation techniques in chromatography, and typical applications of chromatographic techniques.
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CO 17	T.Y.B.Sc Sem-V	CH -355 Industrial Chemistry	<ul style="list-style-type: none"> •To produce graduates with enhanced skills, applied knowledge, aptitude to carry out higher studies or research and development in the various industrial areas. •To make the student cognizant about important aspects of Chemical Industries, Industrial work culture and environment. •To prepare the students for immediate entry to the workplace with sound theoretical knowledge and some basic experimental concepts in the area of various industries viz. Sugar Industry, Fermentation Industry, Petroleum and Petrochemicals. •To offer the synergism between basic concepts of Chemistry with Industrial applications. •To equip the students with knowledge of some industrial organic synthesis as a requirement of diverse chemical industries. •Empower the students to understand the concepts in chemical processing, engineering and industrial development.
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CO 18	T.Y.B.Sc Sem-V	CH -356 (A) Biochemistry	<ul style="list-style-type: none"> •Students will study molecules like carbohydrates, amino acids, proteins, enzymes, lipids and nucleic acids. •Students will understand definitions, classifications and examples of these biomolecules. •Students will learn the detailed structure of these biomolecules along with types of bonds or linkages present in their molecules. •Students will learn the chemical properties of these biomolecules and the action of some reagents on them in the form of reactions or graphical presentation. •Students will understand biochemical energetics of common energy rich compounds along with hydrolytic reactions. Page 41 of 70
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			<ul style="list-style-type: none"> •Students will learn metabolisms like Glycolysis, TCA cycle, Transamination, deamination and β- oxidation through reactions, enzymes involved, outlines and energetics.
CO 19	T.Y.B.Sc Sem-VI	CH -361 Physical Chemistry	<ul style="list-style-type: none"> •To learn the basics of molecular spectroscopy and rotational spectra. •To understand the basic principles and applications of nuclear chemistry. •To learn the consequences of light absorption by atoms and molecules and photochemical reactions. •To learn the laws of crystallography and basics of crystal structure.

CO 20	T.Y.B.Sc Sem-VI	CH -362 Inorganic Chemistry	<ul style="list-style-type: none"> •The bonding fundamentals for both ionic and covalent compounds, including electronegativities, bond distances and bond energies using MO diagrams and thermodynamic data •Predicting geometries of simple molecules • The fundamentals of the chemistry of the main group elements, and important real world applications of many of these species •The use of group theory to recognize and assign symmetry characteristics to molecules and objects, and to predict the appearance of a molecule's vibrational spectra as a function of symmetry •The bonding models, structures, reactivities, and applications of coordination complexes, boron hydrides, metal carbonyls, and organometallics.
CO 21	T.Y.B.Sc Sem-VI	CH -363 Organic Chemistry	<ul style="list-style-type: none"> •This semester I have fragmentation and retrosynthetic analysis and also finding a synthon or reactive starting molecule of a target molecule. •Pericyclic reactions are used in a vast way in nature and also by organic chemists. •This course gives the student the theoretical basis of this kind of reaction and also helps them to find a way to carry out these types of reactions. the reactivity and stability of an organic molecule based on structure, including conformation and

			<p>stereochemistry an understanding of nucleophiles, electrophiles, electronegativity, and resonance the prediction of mechanisms for organic reactions</p> <ul style="list-style-type: none"> •how to use their understanding of organic mechanisms to predict the outcome of reactions 5. how to design syntheses of organic molecules •how to determine the structure of organic molecules using IR and NMR spectroscopic techniques.
CO 22	T.Y.B.Sc Sem-VI	CH- 364 Analytical Chemistry	<ul style="list-style-type: none"> •To develop an understanding of the range and uses of analytical methods in spectrometry. •To understand and establish the role of chemistry in quantitative analysis using IR and Thermal methods. •To enhance the Analytical instrumental skill of the students.
CO 23	T.Y.B.Sc Sem-VI	CH -365 Industrial Chemistry	<ul style="list-style-type: none"> •To produce graduates with enhanced skills, applied knowledge, aptitude to carry out higher studies or research and development in the various industrial areas. •To make the student cognizant about important aspects of Chemical Industries, Industrial work culture and environment. •To prepare the students for immediate entry to the workplace with sound theoretical knowledge and some basic experimental concepts in the area of various industries viz. Sugar Industry, Fermentation Industry, Petroleum and Petrochemicals. •To offer the synergism between basic concepts of Chemistry with Industrial applications. •To equip the students with knowledge of some industrial organic synthesis as requirement of diverse chemical industries. •Empower the students to understand the concepts in chemical processing, engineering and industrial development.

CO 24	T.Y.B.Sc Sem-VI	CH -366 (C) Polymer Chemistry	<ul style="list-style-type: none"> •Define terms like monomer, polymer, polymerization, polydispersity index, etc., classify polymers based on their origin, native backbone chain, and thermal response. •Know glass transition temperature and its determination, various ways to express molecular weights of polymers and polydispersity index. • Identify different mechanisms of polymerizations viz. free radical, ionic, and condensation polymerizations. •Distinguish techniques of polymerization based on physical conditions required for the preparation of polymers in laboratory or industry. • Familiar with preparation, properties, and applications of industrially important selected polymers.
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➤ **Course Outcomes:B.Sc. Physics: -**

Sr. No.	Class	Course	Course Outcomes
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CO 1	F.Y.B.Sc Sem-I	PHY-101: Basic Mechanics	<ul style="list-style-type: none"> •Apply the concept of use of knowledge of mechanics to real life problems. •Understanding of the course will create scientific temperament. •The students would learn about the behavior of physical bodies. It provides the basic concepts related to the motion of all the objects around us in our daily life. •The velocity and acceleration parameters give the knowledge about how the vehicles Move.
CO 2	F.Y.B.Sc Sem-I	PHY-102: Dynamics and Elasticity	<ul style="list-style-type: none"> •Study the behavior of rigid body dynamics. •To make the students understand the dynamics involved in a rigid body. •Learn how Young's modulus and rigidity modulus are defines and how they are evaluated for different shapes of practical relevance
CO 3	F.Y.B.Sc Sem-II	PHY-201: Electricity and Electrostatics	<ul style="list-style-type: none"> • Gain knowledge of Gauss laws and solve the electric field for various geometric objects

			<ul style="list-style-type: none"> •To understand the basic concepts of Electric field and Electric Potential.
CO 4	F.Y.B.Sc Sem-II	PHY-202: Dielectrics, Magnetism And Electromagnetism	<ul style="list-style-type: none"> •Enable the concept of magnetic field. •Understand the faraday's laws of electromagnetic induction •Enable to familiarize with the laws of electromagnetic induction •Thorough knowledge in the basic concept of electromagnetic induction •Able to derive the Maxwell's equation in free space and material media

CO 5	S.Y.B.Sc Sem-III	PHY-301: Thermodynamic s and Kinetic theory of gasses	<ul style="list-style-type: none"> •Understand the concept of thermodynamics and their laws. •Understand the Heat Engine and their uses •Describe the thermodynamic function and their relations •To study Maxwell Relations and Application.
CO 6	S.Y.B.Sc Sem-III	PHY-302 (A): Electronics –I	<ul style="list-style-type: none"> •Understand the basics of diode and working of rectifier circuits and characteristics •Analyze the characteristics of transistor and transistor biasing circuits •Understand the basic knowledge of semiconductor physics •Learn how to construct a transistor amplifier and how its gain varies with frequency •Understand the fundamentals of codes and number system •Understand the binary arithmetic , logics and Boolean functions
CO 7	S.Y.B.Sc Sem-III	PHY 304: Skill Enhancement Course	<ul style="list-style-type: none"> •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.

			<ul style="list-style-type: none"> • Understand the concept of Biomass energy resources
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CO 8	S.Y.B.Sc Sem-IV	PHY 401: Waves, Oscillations and Acoustics	<ul style="list-style-type: none"> •Apply the concept of use of knowledge of Waves and Sound to real life problems. • Familiarize with general terms in acoustics like intensity, loudness, reverberation etc, and study in detail about production, detection, properties and uses of ultrasonic waves •Analyze waves and oscillations
CO 9	S.Y.B.Sc Sem-IV	PHY 402: Optics and LASERS	<ul style="list-style-type: none"> •Understand the natural behavior of aberration in lens •Study the theory and experiment of interference using air wedges, Newton's rings etc. •Study the theory of diffraction by Fresnel and Fraunhofer methods •Study the theories for production of polarization of light •Explain different Laser uses and make a comparison between them. •Apply the gained basic knowledge of laser and working of different type of lasers.
CO 10	S.Y.B.Sc Sem-IV	PHY 404: Electrical Circuits and Network Skills	<ul style="list-style-type: none"> •After the completion of the course the student will acquire necessary skills/ hands on experience /working knowledge on millimeters, voltmeters, ammeters, electric circuit elements, dc power sources, ac/dc generators, inductors, capacitors, transformers, single phase and three phase motors, interfacing dc/ac motors to control and measure, relays and basics of electrical wiring. •Study circuits in a systematic manner suitable for analysis and design. •Analyze the electric circuit using network theorem.

➤ **Course Outcomes:B.Sc. Mathematics: -**

Sr. No.	Class	Course	Course Outcomes
CO 1	F.Y.B.Sc Sem-I	MTH 101: Matrix Algebra	<ul style="list-style-type: none"> •Understand concepts on matrix operations and rank of the matrix. •Understand the use of matrices for solving the system of linear equations. •Understand basic knowledge of the Eigenvalues and Eigenvectors. • Apply Cayley-Hamilton theorem to find the inverse of the matrix. •Know the matrix transformation and its applications in rotation, reflection, translation.
CO 2	F.Y.B.Sc Sem-I	MTH 102: Calculus	<ul style="list-style-type: none"> •Understand basic concepts on limits and continuity. •Understand use of differentiations in various theorems. •Know the Mean value theorems and its applications. •Make the applications of Taylor's, Maclaurin's theorem. •Know the applications of calculus.

CO 3	F.Y.B.Sc Sem-I	MTH-103(B) Graph Theory	<ul style="list-style-type: none"> •Make the applications Graph, Simple graph, Multigraph, Hand shaking lemma, Types of Graphs, Operations on graphs, Subgraphs, Isomorphism of graphs, Walk, path, cycles •Solving examples of Connected and disconnected Graphs, bridges, cut vertices, edge connectivity and vertex connectivity, Eulerian graph, Hamiltonian Graph, Planar Graph, Euler's Formula for planar graphs, Kuratowski's two graph, Geometrical dual •Solve problems on Definition and some properties of trees, Distance and Center in a tree, Definitions of Rooted and Binary trees, spanning trees, Minimal Spanning trees, Directed graphs, some types of digraphs.
CO 4	F.Y.B.Sc Sem-II	MTH 201: Ordinary Differential Equations	<ul style="list-style-type: none"> •Understand basic concepts in differential equations. •Understand method of solving differential equations •Understand the use of differential equations in various fields.
CO 5	F.Y.B.Sc Sem-II	MTH 202: Theory of Equations	<ul style="list-style-type: none"> •Students can find out the roots of any equation of degree less than or equal to five. Theory of equations is highly useful in various subjects like algebra, linear algebra, calculus, ordinary and partial differential equations etc.
CO 6	F.Y.B.Sc Sem-II	MTH 203 (B): Numerical Analysis	<ul style="list-style-type: none"> •Understand basic concepts of methods of solutions of equations viz. bisection, iteration, Newton-Raphson methods and method of false position. •Understand methods of curve fitting viz. Gauss's forward and backward difference formulae and Lagrange's interpolation formula. •Use of curve fitting such as least square, polynomial and exponential fittings set of given data. •Use Taylor's series, Euler's method. Modified Euler's method., Runge Kutta method.

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CO 7	S.Y.B.Sc Sem-III	MTH -301: Calculus of Several Variables	<ul style="list-style-type: none"> • Limit and continuity of functions of several variables • Fundamental concepts of multivariable Calculus. • Series expansion of functions. •Extreme points of function and their maximum, minimum values at those points. •Meaning of definite integral as limit as sums. •How to solve double and triple integration and use them to find area by double integration and volume by triple integration.
CO 8	S.Y.B.Sc Sem-III	MTH-302(B): Theory of Groups and Codes	<ul style="list-style-type: none"> •Understand groups and their types which is one of the building blocks of pure and applied mathematics. •Understand Lagrange's, Euler and Fermat theorem •Understand concept of automorphism of groups •Understand concepts of homomorphism and isomorphism e) understand basic •Properties of rings and their types such as integral domain and field.
CO 9	S.Y.B.Sc Sem-III	MTH 304: Complex Variable	<ul style="list-style-type: none"> •Uses of the language of set theory, designing issues in different subjects of mathematics •Understand the issues associated with different types of finite and infinite sets via countable uncountable sets •Knowledge of the concepts and methods of mathematical logic, set theory, relation calculus, and concepts concerning functions which are included in the fundamentals of various disciplines mathematics •Understanding the role of propositional and predicate calculus able to provide •The logical mathematical reasoning, formulate theorems and definitions

CO 10	S.Y.B.S c Sem-IV	MTH -401: Complex Variables	<ul style="list-style-type: none"> •The course is aimed to introduce the theory for functions of complex variables • Students will understand the concept of analytic function •Students will understand the Cauchy Riemann Equations •Students will understand harmonic functions •Students will understand complex integrations •Students will understand the calculus of residues. •Students will acquire the skill of contour integrations.
CO 11	S.Y.B.S c Sem-IV	MTH 402(B): Differential Equations and Numerical Methods	<ul style="list-style-type: none"> •Students will aware of formation of differential equations and their solutions •Students will understand the concept of Lipschitz condition •Students will understand the method of variation of parameters for second order L.D.E. •Students will understand simultaneous linear differential equations and method of their solutions •Students will understand Pfaffian differential equations and method of their solutions •Students will understand difference equations and their solutions

➤ **Course Outcomes:B.Sc Zoology: -**

Sr. No	Class	Course	Course Outcomes
CO 1	F.Y.B. Sc Sem-I	ZOO: 101 Animal Diversity I	<ul style="list-style-type: none"> •Understand classification of Protista. •Study General Characters and classification up to classes. •Describe and classify phylum Platyhelminthes and identify the problems caused by parasitic forms •Understand the anatomical features of non- chordates through type study of Phylum Arthropoda.

CO 2	F.Y.B.Sc Sem-I	ZOO: 102 Animal Diversity II	<ul style="list-style-type: none"> •Describe and classify branch Pisces, with examples and salient features •Study the Generate an understanding about phyla. •Classify mammals and interpret general evolutionary relationships among and between these animal groups.
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CO 3	F.Y.B.Sc Sem-II	ZOO: 201 Comparative Anatomy of Vertebrates	<ul style="list-style-type: none"> •Understand Derivatives of integument w.r.t. glands and digital tips. •Describe comparative anatomy of Vertebrates. •Discuss Brief account of alimentary canal and digestive glands. •Identify Types of receptors.
CO 4	F.Y.B.Sc Sem-II	ZOO: 202 Developmental Biology of Vertebrates	<ul style="list-style-type: none"> •Describe Early Embryonic Development. •Differ Fundamental processes in development •Explain in brief Types of placenta on the basis of histology •Understand Developmental biology of Vertebrates
CO 5	S.Y.B.Sc Sem-III	ZOO:301 Physiology	<ul style="list-style-type: none"> •Understand Structure of a neuron. •Understand about Absorption of carbohydrates, proteins, lipids. •Describe Respiratory volumes and capacities. •Acquire knowledge regarding Structure of Heart and Endocrine glands.
CO 6	S.Y.B.Sc Sem-III	ZOO:302 Biochemistry	<ul style="list-style-type: none"> •Describe Biosynthesis and β oxidation of palmitic acid. •Understand Classification of Enzymes •Develop knowledge of Enzyme Kinetics
CO 7	S.Y.B.Sc Sem-III	ZOO: 303 Physiology & Biochemistry	<ul style="list-style-type: none"> •Understand Preparation of hemin and hem chromogens •Understand about Estimation of total protein in given solutions by Lowry's method •Describe Study of permanent slides of spinal cord, duodenum, liver, lung, kidney, bone, cartilage

CO 9	S.Y.B.S c Sem-IV	ZOO 401 Genetics	<ul style="list-style-type: none"> •Understand about Mendel's work on transmission of traits
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			<ul style="list-style-type: none"> •Understand Chromosome theory of inheritance •Describe definition of gene mapping & mutation •Students become familiar with Chromosomal mechanisms and methods
CO 10	S.Y.B.S c Sem-IV	ZOO 402 Evolutionary Biology	<ul style="list-style-type: none"> •Understand about Major Events in History of Life •Describe Types of natural selection •Acquire knowledge regarding Biological species concept
CO 11	S.Y.B.S c Sem-IV	ZOO 403 Genetics & Evolutionary Biology	<ul style="list-style-type: none"> •Describe Study of Linkage, recombination, gene mapping using the data •Understand about Study of homology and analogy from suitable specimens/ pictures •Students become familiar with the Study of Mendelian Inheritance and gene interactions.
			<ul style="list-style-type: none"> •Students are taught the detailed concepts of digestion, respiration excretion and the functioning of nerves and muscles. •Students gain fundamental knowledge of animal physiology.