

Course Outcomes - 2020-21
Choice Based Credit System - 2019

Faculty of Arts

B.A. - Geography

Class	Course	Course Outcomes
S.Y.B.A (SEM.-III)	(G2) Environment Geography- I, Subject Code: Gg.210 (A)	<ol style="list-style-type: none"> To get awareness about dynamic environment. To understand fundamental concepts of environment geography 3.Comparison in various factors of Environment and dynamic aspect of Environmental geography. To understand the problems of environment, their utilization and conservation in the view of sustainable development.
S.Y.B.A (SEM.-III)	(S1) Population Geography-I	<ol style="list-style-type: none"> Students understand the history of population. Understand the basic concepts in Population Geography. Students understand the types of Population data.
S.Y.B.A (SEM.-III)	(S2), Scale & Map Projection, subject -201 (A) Practical Geography	<ol style="list-style-type: none"> Develop practical skill and use of map scale and projection. To make students aware of the new techniques, accuracy and skills of map making. Students Develop skill Use of Map stencils, Log tables, Calculator, computer, Statistical Tables is allowed at the time of Examination.
S.Y.B.A (SEM.-IV)	(G2) Environment Geography- Subject Code: Gg.210 (B)	<ol style="list-style-type: none"> Student aware about dynamic environment. Acquaint students the fundamental concepts of Env.Geography. Students Understands about the past, presents and future utility and potentials of natural resources. Student aware students about the problems of environment, its utilization and conservation in the view of sustainable development.
S.Y.B.A (SEM.-IV)	(S1) Population Geography- Subject Code: Gg.220 (B)	<ol style="list-style-type: none"> Students Understand to the Population Policy of India and China. Understand the Health indicator in India. Students Introduce with the concept of urbanization in population geography. Students understand population theories.
S.Y.B.A (SEM.-IV)	(S2), Scale & Map Projection, Practical Geography	<ol style="list-style-type: none"> Develop practical knowledge and application of cartographical techniques. To make students aware of the new techniques, accuracy and skills of Map Making.

M.A. / M.Sc. Geography

Class	Course	Course Outcomes
M.A/M.Sc. (Sem.-I)	Principles of Climatology	<ol style="list-style-type: none"> Explain principal terms and concept of Climatology. Describe composition and Structure of Earth Atmosphere and also explain electromagnetic spectrum, its effect on earth atmosphere and types of insolation. Explain basic concepts of air temperature, air pressure and its measurement and explain basic concepts of wind and wind measurement. Explain basic concepts of hydrological cycle, condensation and evaporation. Also describes concept of Lapse Rate, Stable and unstable Atmosphere, Air Masses & Fronts. Apply skill of weather forecasting and application in deferent sectors of Climatology.



M.A/M.Sc. (Sem.-I)	Principles of Economic Geography	<ol style="list-style-type: none"> 1. Explain principal terms, definitions, concept, nature, scope and recent trends in Economic Geography. 2. Also discuss types of hypotheses in economic geography and formation and testing of hypotheses. 3. Explain economic landscape, theories and models. Describe resources and explain significance of natural and human resources in economic development. 4. Discuss pre and post-independence economic development in India. Impact of Green Revolution, Privatization, Globalization. 5. Explain measures of economic development classification of countries and also categorizes and compares different countries with their economic development.
M.A/M.Sc. (Sem.-I)	Principles of Population Geography	<ol style="list-style-type: none"> 1. Explain Evaluation of settlement and population geography globally. 2. Describe factors influencing growth and distribution of settlements. Also identify various patterns of settlement using topo sheet. 3. Analyze factors influencing the nucleation, Measure degree of dispersion and nearest neighbor using Topo sheet. Apply concepts of Modality, Centrality, Range, Threshold and Hierarchy to describe the features of settlement. 4. Analyze factors responsible for urbanization and influencing the distribution of settlement globally. 5. Apply of theories of population growth to study settlement history.
M.A/M.Sc. Sem.-I	Principles in Physical and Human Geography	<ol style="list-style-type: none"> 1. Describe drainage network analysis and drainage basin relief analysis. Also demonstrate Horton and Strahler methods of stream ordering and explaining the relationship between stream order and number. 2. Demonstrate climatic diagrams. Describe climatic classification of Koppell and Thorn Thwaite. Also construct water budget diagram using Precipitation & potential evapotranspiration data. 3. Calculate agricultural efficiency and analysis of methods, network structures, Lorenz curve and location quotient, logarithmic graph papers, child women ratio, age sex pyramid & dependency ratio, infant mortality rate and age specific mortality and population growth rate and population projection. 3. Perform a quantitative analysis of experimental data including use of computational and statistical methods where relevant. 4. Assess the language used to describe Geography experiments and how it can alter perceptions of the method and results.
M.A/ M.Sc. Sem. 2	Geo – informatics - I	<ol style="list-style-type: none"> 1. Explain definition, concepts and principles, components. 2. Describe methodologies of extracting data from remotely sensed imagery. 3. Describe methodologies of extracting data from remotely sensed imagery. & explain processing and analysis of data collected from remote sensors. 4. Apply knowledge of remote sensing and Geographical Information System in assessment, planning and monitoring in real life application. & knowledge spatial data analysis.
M.A/ M.Sc. Sem. 2	Geo- Morphology Coastal Geo- Morphology	<ol style="list-style-type: none"> 1. Explain principal terms, definitions, concept and theories of Coastal Geomorphology. 2. Discuss different coastal processes and the coastal landforms. 3. Explain mechanism of sea level changes. & describe different coastal environments 4. Fluvial-dominated, Wave-dominated, Tide-dominated and Biotic environments

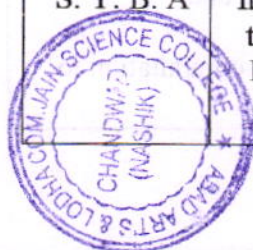


		5. Apply knowledge of coastal Geomorphology in the field of sea level rise, storm hazard management, coastal erosion, wetlands, estuarine reclamation, salt intrusion and subsidence of coastal aquifers
M.A/ M.Sc. (Geography) -Sem. 2	Geo- Morphology Fluvial Geo Morphology	1. Explain principal terms, definitions, concept and theories of fluvial Geomorphology. 2. Describe Hydraulic Geometry and Explain fluvial processes. 3. Describe Channel Morphology 4. Explain Fluvial Erosion, transportation and deposition and associated landforms. 5. Explain river metamorphosis.
M.A/ M.Sc. Geography Sem. 2	Population Geography	1. Describe nature of man-environment relationship and human capability. 2. Explain conditions of living of human beings from primitive life to the modern era. 3. Identify and explain spatial distribution pattern of population and environment 3. Analyse relationship between population and available resources. 4. Study about the demographic theory and population growth.
M.A/ M.Sc. (Geography) Sem. 2	Population geography- Geography of Rural Settlements	1. Explain principal terms, definitions, concept and theories of Rural Settlements. Also apply of theories of population growth to study settlement history. 2. Explains the Site, situation, location of a region. 3. Analyze factors responsible for urbanization and influencing the distribution of settlement globally. 4. Explains the theory of Von Thune, Ricardo and Central Place Theory 5. Describe the Rural House Types - Primitive, vernacular and modern high rise, Physical, social, cultural and economic factors, Size, functional use and architectural style, Building material.
M.A/ M.Sc. (Geography) Sem. 2	Practical in Surveying	1. Explain principle terms, definitions, and methods used in surveying. 2. Describe different surveying instruments and field survey methods with computation and drawing. 3. Compute by Collimation method Rise and fall method. 4. Apply the knowledge of surveying in the field analyze the findings. 5. Apply the knowledge of surveying to survey of a selected field Such as coastal beach, river profiling, and village plan map. 6. Write report in proper format.
M.A/ M.Sc. Geography Sem. 2	Geography of Disaster Management	1. Explain principal terms, definitions and concept of disaster management. 2. Explain types of disasters. 3. Describe various disasters with their trend and impact. 4. Identify the different Disaster management techniques with their application. 5. Apply and use of ICST for different disaster management. 6. Describe the various disasters in India and their management issues.
M.A/ M.Sc. (Geography) Sem. 2	Practical of Statistical Techniques for Geography	1. Apply concepts of bivariate and statistics to analyze soil samples 2. Analyze geographical aspects using curvilinear bivariate relationship 3. Describe and apply regression equation, ANOVA, central tendency, etc. 4. Explain Mapping, analysis of scores, interpretation and regionalization. 5. Apply concept of factorial Analysis, principle and computation to analyze the data.



B.A. - Political Science

Class	Course	Course Outcomes
S. Y. B. A Sem. - III	G-II 23164 (CC-1C) An Introduction to Political Ideologies	<ol style="list-style-type: none"> 1. It helps students to understand the nature and scope of political ideology 2. Students are compare between the Fascism and Democratic Socialism 3. Students are able to explain various elements of nationalism.
S. Y. B. A Sem. - IV	G-II 24164 (CC-1D) An Introduction to Political Ideologies	<ol style="list-style-type: none"> 1. It helps Students to understand the importance of Gandhism for world peace 2. It helps Students to understand the relevance of Marxism in contemporary world 3. Students are able to understand the ideology of feminism in Indian aspect
S. Y. B. A Sem. - III	23161 (DSE-1A) Western Political Thought	<ol style="list-style-type: none"> 1. It helps students to understand the theoretical framework of various political institutions 2. Studies of philosophers like Plato and Aristotle help students to understand the role of citizens in the ideal state 3. Students understand different theory of state creation through the study of elements like Hobbes, John Locke, and Rousseau
S. Y. B. A Sem. - IV	24161 (DSE-1B) Western Political Thought	<ol style="list-style-type: none"> 1. It helps students to understand the theory of liberty in individual and social aspects 2. Students understood the reforms in representative democracy by the J.S. Mill 3. Students explain the relevance of Karl Marx's ideas in today's changing social and political environment
S. Y. B. A Sem. - III	23162 (DSE-2A) Political Journalism	<ol style="list-style-type: none"> 1. Students understood the role and importance of political journalism in democracy 2. Students are able to describe the various agencies of political journalism like print, electronic, web etc. 3. Students have been able to criticized the role of political journalism in democracy
S. Y. B. A Sem. - IV	24162 (DSE-2B) Political Journalism	<ol style="list-style-type: none"> 1. It helps students to understand the importance of social media in election process in India 2. It helped students to understand the relationship between the communication, media and power politics 3. Students could explain the challenges before political journalism in India
S. Y. B. A Sem. - III	23165 (SEC-2A) Basics of Indian Constitution	<ol style="list-style-type: none"> 1. Students are able to understand the historical background and the salient features of Indian constitution 2. Students explain the importance of fundamental rights to overall development of citizens in civil society
S. Y. B. A Sem. - IV	24165 (SEC-2B) Basics of Indian Constitution	<ol style="list-style-type: none"> 1. Students explain the difference between the fundamental rights and directive principles in Indian constitution 2. To realize social responsibility to students as a citizens in democracy
S. Y. B. A	G-II (CC-1) An Introduction to Political Ideologies	<ol style="list-style-type: none"> 1. It helps students to understand the nature and scope of political ideology. 2. Students are compare between the Fascism and Democratic Socialism. 1. Students are able to explain various elements of nationalism. 2. It helps Students to understand the importance of Gandhism for world peace.



S. Y. B. A	S-I (DSE-1) Western Political Thought	<ol style="list-style-type: none"> 1. It helps students to understand the theoretical framework of various political institutions. 2. Studies of philosophers like Plato and Aristotle help students to understand the role of citizens in the ideal state. 3. Students understand different theory of state creation through the study of elements like Hobbes, John Locke, and Rousseau. 4. Students explain the relevance of Karl Marx's ideas in today's changing social and political environment.
S. Y. B. A	S-II (DSE-2) Political Journalism	<ol style="list-style-type: none"> 1. Students understood the role and importance of political journalism in democracy. 2. It helped students to understand the relationship between the communication, media and power politics. 3. Students have been able to criticize the role of political journalism in democracy. 4. Students could explain the challenges before political journalism in India.
S. Y. B. A	SEC 2 - Basics of Indian Constitution	<ol style="list-style-type: none"> 1. Students are able to understand the historical background and the salient features of Indian constitution. 2. Students explain the importance of fundamental rights to overall development of citizens in civil society. 3. Students explain the difference between the fundamental rights and directive principles in Indian constitution. 4. To realize social responsibility to students as a citizens in democracy.

M. A. - Political Science (2020-2021)

Class	Course	Course Outcomes
M.A.- II (Sem.-III)	Modern Political Thought. Sem.-III	<ol style="list-style-type: none"> 1. It helps the students to understand the political ideas, views and concerns of leading Indian thinkers. 2. Students are able to understand and decipher the diverse and often contesting ways in which the ideas of nationalism, democracy and social transformation were discussed in pre and post-independence India. 3. Student are Compare the views of Dr. Ambedkar and Ram Manohar Lohia on caste. 4. Students are able to discuss the contribution of Mahatma Gandhi in modern Maharashtra.
M.A.- II (Sem.-III)	Political Sociology Sem.-III	<ol style="list-style-type: none"> 1. It helps students to understand the nature and scope of political sociology. 2. Students explain the difference between power and authority. 3. To understand the Role of Hegemony in the Politics. 4. Students are able to Criticized of Marks Class Model.
M.A.- II (Sem.-III)	World Politics- New Developments. Sem.-III	<ol style="list-style-type: none"> 1. Students are able to understand the importance of intervention and coercive methods in world politics. 2. Students can explain the disadvantages of international terrorism. 3. Students understand the role of transnational actors (MNCS and TNCS) in the national politics. 4. Students are aware of Environmental issues in developing world.



M.A.- II (Sem.-III)	Indian Administration - Structure and Organization. Sem.-III	<ol style="list-style-type: none"> 1. It helps the students to understand the key dimensions of Indian administration functioning at different levels. 2. The students understand the importance of the Prime Minister's Office (PMO) in Central Administration. 3. Students can explain the role responsibilities of governor in the administration of the states. 4. It helps to understand the Civil Service Reform in the context of Liberalization.
M.A.- II (Sem.-IV)	Fundamentals of Political Theory. Sem.- IV	<ol style="list-style-type: none"> 1. It helps the students to understanding the nature and significance of political theory. 2. Students are understand the major key concepts of political science, like Liberty, Equality, Justice, Rights etc. 3. Students are able to understand the Power, Authority and Legitimacy in contemporary perspectives. 4. It helps the students to understand the State, Democracy, and Civil Society.
M.A.- II (Sem.-IV)	Political Process In India. Sem.-IV	<ol style="list-style-type: none"> 1. Students are informed about the political socialization by the election since 1951. 2. To able to explain the merits and demerits of multiparty system in India. 3. Students are aware of barriers of regionalism in national integration. 4. Students describe the role of caste in Indian politics.
M.A.- II (Sem.-IV)	Politics and Society. Sem.- IV	<ol style="list-style-type: none"> 1. It helps the students to understand the interface of politics with social structures. 2. Students are able to understand the political processes and how the nature of power is shaped by social factors. 3. It helps the students to understand the factors of society like community, culture and religion. 4. Students are able to understand the social developments by social movements.
M.A.- II (Sem.-IV)	Globalization and State. Sem.-IV	<ol style="list-style-type: none"> 1. It helps them to understand the nature of globalization & its impact on the nation states. 2. It helps the students of understand the responses of the state to the process of Globalization. 3. Students are help to understand the challenges of globalization before the nations and states. 4. Students are able to understand the Security Dilemma of Post-Colonial States.
M.A.- II (Sem.-III)	Introduction to Constitution Sem.-III Compulsory Course for All Faculties	<ol style="list-style-type: none"> 1. To introduce the philosophy of Constitution of India to students. 2. To acquaint them with their freedoms and responsibilities. 3. To creates awareness of democratic values and political rights among students for national integration. 4. Students explain the difference between the fundamental rights, directive principles and fundamental duties in Indian Constitution.



B.A. - History

Class	Course	Course Outcome
SYBA (Sem. III)	G-2 History of the Marathas (1630-1707)	<ol style="list-style-type: none"> 1. Student will develop the ability to analyse sources for Maratha History. 2. Student will learn significance of regional history and political foundation of the region. 3. It will enhance their perception of 17th century Maharashtra and India in context of Maratha history. 4. Appreciate the skills of leadership and the administrative system of the Marathas.
SYBA (Sem. III)	S-1 Medieval India (Sultanate Period)	<ol style="list-style-type: none"> 1. Provides examples of sources used to study various periods in history. 2. Relates key historical developments during medieval period occurring in one place with another. 3. Analyses socio - political and economic changes during medieval period 4. Estimate the foreign invasion and the achievement of rulers
	S-2 Glimpses of the Modern World (PART I)	<ol style="list-style-type: none"> 1. It will enable students to develop the overall understanding of the Modern World and economic developments during the Modern World. 2. The students will get acquainted with the Renaissance, major political, socio-religious
	(SEC) Tourism Management	<ol style="list-style-type: none"> 1. Students will get an overall understanding of the process of Tourism Management. 2. They will learn to work in the Tourism Management with great potential. 3. They will be able to seek self-employment by starting their own tourism related business.
SYBA (Sem. IV)	G-2 History of the Marathas: (1707-1818)	<ol style="list-style-type: none"> 1. Students will be able to analyze the Marathas policy of expansionism and its consequences. 2. They will understand the role played by the Marathas in the 18th century India. 3. They will be acquainted with the art of diplomacy in the Deccan region. 4. It will help to enrich the knowledge of the administrative skills and profundity of diplomacy
	S-1 Medieval India (-Mughal Period)	<ol style="list-style-type: none"> 1. Draws comparisons between policies of different rulers. 2. Understanding Role of Akbar in consolidation of Mughal in India. 3. Understand Aurangzeb's conflict with Rajputas, Maratha and weakening Mughals age. 4. Analyses factors which led to the emergence of new religious ideas and movements (bhakti and Sufi)
SYBA (Sem. IV)	S-2 Glimpses of the Modern World (PART II)	<ol style="list-style-type: none"> 1. It will enhance their perception of the history of the Modern World. 2. It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World 3. It will enable students to develop the overall understanding of the Modern World.
	(SEC) Travel Agency & Tour Business	<ol style="list-style-type: none"> 1. This course is designed to create awareness about Travel Agency, Education and Job opportunities among the students. 2. It aims in training students on both Theory and Practical aspect and Travel Agency and creating professionals for tourism industry. 3. It will enable student to seek self-employment by starting their own Travel Agency related to business.



M.A. - History

Class	Course	Course Outcomes
MA-II (Sem. III)	1. Cultural History of Maharashtra	1. This paper is designed to help the student situate and interpret the cultural manifestations across historical memory which have contributed to the creation of the geopolitical region of Maharashtra.
	2. Intellectual History of the Modern World	1. The paper is seen as a prerequisite for understanding the concepts that are used in history, to acquaint the student with the intellectual activity that played an important role in shaping events the transition from medieval to modern times.
	3. Economic History of Modern India	1. To acquaint the student with structural and conceptual changes in Indian economy after coming of the British, 2. To make them aware of the exploitative nature of the British rule, 3. To help them understand the process of internalization by Indians of new economic ideas, principles and practices.
	4. East Asia: Japan (1853-2000)	1. The course is designed to help the students to know Japanese history especially after the opening up of Japan; Japan's modernization and its impact; post World War II developments and Japan's role in world politics.
MA- II (Sem. IV)	1. Modern Maharashtra: History of Ideas	1. The paper aims to let the students explore the ideas which have given Maharashtra its unique character. 2. It also hopes to offer a specialized knowledge of the Intellectual History of Maharashtra based on a critical reading of the original textual sources.
	2. Debates in Indian Historiography	1. The course is designed to introduce the student to some of the issues that that have been debated by historians and to introduce some perspectives with reference to Indian History.
	3. World after World War II (1945-2000)	1. To acquaint the student with the post-World War II scenario and to enable them to understand contemporary world from the historical perspective.
	4. Modern India	1. The purpose of this course is to enable the student to study the history of 'Modern India' from an analytical perspective 2. To make the student aware of the multi-dimensionality of Modern India; to highlight the ideas, institutions, forces and movements that contributed to the shaping of Indian modernity 3. To acquaint the student with various interpretative perspectives to help them in articulating their own ideas and views leading to research orientation.

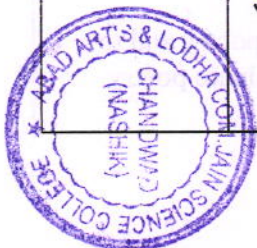


B.A. Marathi – (बी.ए. मराठी)

Class	Course	Course Outcome
SYBA - G2 Sem. - I	भाषिक कौशल्य विकास आणि आधुनिक मराठी साहित्यप्रकार : कादंबरी	१. कादंबरी या साहित्यप्रकाराचे स्वरूप, घटक, प्रकार आणि वाटचाल समजावून घेतली. २. नेमलेल्या कादंबरीचे आकलन, आस्वाद आणि विश्लेषण या घटकांचा परिचय झाला.
SYBA G2 Sem. - II	भाषिक कौशल्य विकास आणि आधुनिक मराठी साहित्यप्रकार : ललितगद्य	१. ललितगद्य या साहित्यप्रकाराचे स्वरूप, घटक, प्रकार आणि वाटचाल समजावून घेतली. २. नेमलेल्या अभ्यासपुस्तकातील ललितगद्याचे आकलन, आस्वाद आणि विश्लेषण या घटकांचा परिचय झाला.
SYB S1 Sem. - I	आधुनिक मराठी साहित्य : प्रकाशवाटा	१. आत्मचरित्र या साहित्यप्रकाराचे स्वरूप, संकल्पना समजावून घेतली. २. आत्मचरित्र या साहित्यप्रकाराच्या प्रेरणा आणि वाटचाल यांची ओळख झाली. ३. ललित गद्यातील अन्य साहित्यप्रकारांच्या तुलनेत आत्मचरित्राचे वेगळेपण समजावून घेतले. ४. नेमलेल्या या आत्मचरित्राचे आकलन, आस्वाद आणि विश्लेषण परिचय झाला.
SYBA S1 Sem. - II	मध्ययुगीन मराठी साहित्य: निवडक मध्ययुगीन गद्य, पद्य	१. मध्ययुगीन गद्य - पद्य साहित्यप्रकारांची ओळख झाली. २. नेमलेल्या अभ्यासपुस्तकातील मध्ययुगीन गद्य - पद्याचे आकलन, आस्वाद आणि विश्लेषण परिचय झाला.
SYBA S2 Sem. - I	साहित्य विचार	१. भारतीय आणि पाश्चात्य साहित्यविचाराच्या आधारे साहित्याची संकल्पना, स्वरूप आणि प्रयोजनविचार यांचा परिचय झाला. २. साहित्याची निर्मितीप्रक्रिया समजावून घेतली. ३. साहित्याची भाषा आणि शैली विषयक विचार समजावून घेतले.
SYBA S2 Sem. - II	साहित्य समीक्षा	१. साहित्य समीक्षेची संकल्पना, स्वरूप यांचा परिचय झाला. २. साहित्य आणि समीक्षा यांचे परस्पर संबंध समजावून घेतले. ३. साहित्यप्रकारानुसार समीक्षेचे स्वरूप यांची माहिती झाली. ४. ग्रंथ परिचय, परीक्षण व समीक्षण यातील फरक समजावून घेतला.

M.A. Marathi - (एम.ए. मराठी)

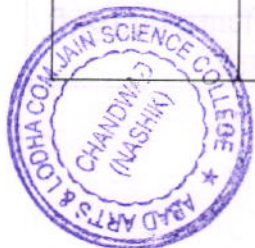
Class	Course	Course Outcome
M. A. – II Sem. III & IV	प्रसार माध्यमांसाठी लेखन कौशल्ये : भाग १ व २	१) प्रसार माध्यमाकरिता लेखन कौशल्ये आत्मसात केले. २) प्रसार माध्यमांचे समाजातील महत्व समजून घेतले. ३) प्रसार माध्यमात सेवेची संधी मिळविण्याकरिता विद्यार्थ्यांनी भाषिक क्षमता विकसित केली.
	साहित्य समीक्षा व संशोधन	१) विद्यार्थ्यांनी साहित्य समीक्षा व्यवहाराची समज वाढीस लागली. २) विद्यार्थ्यांनी समीक्षेची संकल्पना समजून घेण्यास मदत झाली. ३) समीक्षा व्यवहारातील मुल्ये कल्पनांचा परिचय झाला. ४) विविध समीक्षा पद्धतीमाधील विचारव्यूह, दृष्टी विकसित होण्यास मदत झाली. ५) मराठी साहित्य समीक्षकांची परंपरा समजण्यास मदत झाली.



M. A. – II Sem. III & IV	नेमलेल्या अर्वाचीन साहित्य कृतींचा अभ्यास : भाग १ व २	१) अर्वाचीन कालखंडातील साहित्यप्रकार, संकल्पना, समजावून घेतले. २) साहित्यकृतींतील वाङ्मयीनमूल्ये आणि जीवनमूल्ये यांचा परिचय झाला. ३) अर्वाचीन साहित्यप्रकारांची वैशिष्ट्ये जाणून घेतली. ४) कालखंड आणि साहित्यकृतीच्या निर्मितीचा अनुबंध यांची माहिती झाली.
	लोकसाहित्याचे मुलतत्वे आणि मराठी लोकसाहित्य : भाग १ व २	१) लोकसाहित्याचे स्वरूप समजण्यास मदत झाली. २) लोकसाहित्याची व्यापकता व सर्वसमावेशकता समजावून घेतली. ३) लोकसाहित्यातील विविध प्रकार जाणून घेण्यास मदत झाली. ४) लोकसाहित्याचा, इतिहास, पुरातत्व, मानववंशशास्त्र, भाषाशास्त्र, धर्मशास्त्र, दैवतकथाशास्त्र इ. घटकांची माहिती समजून घेतली.

B.A. English

Class	Course	Course Outcome
SYBA Sem.-III	Compulsory English	1. To use literature as a tool of learning the language and communication skills. 2. To inculcate among the students need to learn English. 3. To familiarize students with the forms of English literature.
SYBA Sem.-IV	Compulsory English	1. To provide the students with adequate opportunities of learning and acquiring language. 2. To develop understanding of grammatical and communicative principles. 3. To use literature to study various cultures around the world.
SYBA Sem.-III	Skill Enhancement Course- SEC-1A G-2	1. To instill multiple skills, namely listening, speaking, reading and writing. 2. To impart knowledge about phonological aspects of language like correct pronunciation, stress, tone groups, intonation patterns 3. To familiarize students with the various components of language
SYBA Sem.-IV	Skill Enhancement Course- SEC-1A G-2	1. To develop overall linguistic competence of the students. 2. To introduce students to some advanced areas of language study. 3. To prepare students to go for detailed study and understanding of language.
SYBA Sem.-III	Discipline Specific Course (DSC-1A) S- 1	1. To introduce Drama as a major form of literature 2. To introduce minor forms of Drama 3. To acquaint and enlighten students regarding the literary and the performing dimensions of drama 4. To acquaint and familiarize the students with the elements and the types of Drama
SYBA Sem.-IV	Discipline Specific Course (DSC-1A) S- 1	1. To encourage students to make a detailed study of a few sample masterpieces of English Drama from different parts of the world 2. To develop interest among the students to appreciate and analyze drama independently 3. To enhance students' awareness regarding aesthetics of Drama and to empower them to evaluate drama independently
SYBA Sem.-III	Discipline Specific Course (DSC-2A) S- 2	1. To acquaint students with the terminology in poetry criticism (i.e. the terms used in appreciation and critical analysis of poems) 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 poetry independently



SYBA Sem.-IV	Discipline Specific Course (DSC-2A) S- 2	<ol style="list-style-type: none"> 1. To instill new perspectives to look at the usual matters and to impart enriching nature of poetry. 2. To offers a huge variety of aesthetic and worldly experiences. 3. To convey a thought, describes a scene, or narrates a story in a concentrated, lyrical arrangement of words.
SYBA Sem.-III	Skill Enhancement Course-(SEC- 2A)	<ol style="list-style-type: none"> 1. Enhancing the skill of using English for everyday communication 2. To acquaint the students with the verbal and nonverbal communication 3. To create opportunities to access exposure of speaking in various contexts
SYBA Sem.-IV	Skill Enhancement Course- (SEC-2A)	<ol style="list-style-type: none"> 1. To acquaint and familiarize the students with soft skills 2. To develop interest among the students to interact in English 3. To develop understanding of grammatical and communicative principles.

M. A. English

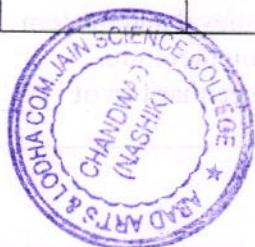
Class	Course	Course Outcome
MA-Part-II Sem.-III	Paper 3.1: Indian Writing in English (Core Paper)	<ol style="list-style-type: none"> 1. To impart an overview of Indian Writing in English. 2. To Aware Students that works written by Indian English writers have been receiving worldwide critical appreciation. Indian Writing in English reflects the multicultural, multilingual society of modern India. 3. To introduce students to the various phases of the evolution in Indian Writing in English.
MA-Part-II Sem.-IV	Paper 4.1: Indian Writing in English (Core Paper)	<ol style="list-style-type: none"> 1. To aware students regarding Indian cultural ethos and indigenous belief systems through the study of major literary works in the domain of Indian English literature. 2. To acquaint them with the writings of different Indian writers and help them to appreciate the variety and diversity of Indian Writing in English. 3. To expose students to the corpus of Indian Writing in English, and explain the socio-political and cultural contexts in which the works were written and received.
MA-Part-II Sem.-III	Paper 3.2: Applied Linguistics	<ol style="list-style-type: none"> 1. To introduce students to the field of Applied Linguistics 2. To help students understand how descriptive linguistics can be used practically to explain the behavioral and social use of language, especially with regard to language acquisition, second language acquisition/learning, language teaching methodology, 3. To help students understand the correlation between the evolution of linguistic theory and the corresponding developments in the field of language learning and teaching
MA-Part-II Sem.-IV	Paper 4.2: Applied Linguistics	<ol style="list-style-type: none"> 1. To enable students to understand the relationship between language learning theories, teaching methods, production of course materials and language testing. 2. To introduce students to the relation between language and culture. 3. To help students understand how linguistic concepts can be applied to the study of literature.
MA-Part-II Sem.-III	Paper 3.4: Indian Literatures in English Translation	<ol style="list-style-type: none"> 1. To introduce students to some of the significant Indian regional language writers of various periods and to their works. 2. To acquaint students with the major ancient, medieval and modern literary movements in India and their influence on literature. 3. To enable students to compare the features and peculiarities of Indian societies, cultures and languages.



MA-Part-II Sem.-IV	Paper 4.4: Indian Literatures in English Translation	<ol style="list-style-type: none"> 1. To acquaint students with the different literary techniques employed by various Indian regional language writers. 2. To help students understand how English gets Indianized in translation. 3. To make students understand the vast possibilities of translating literary texts from their own languages into English and the necessity of undertaking multidisciplinary 4. Research projects focusing on the literary-cultural varieties of India.
MA-Part-II Sem.-III	Paper 3.8: World Literature in English	<ol style="list-style-type: none"> 1. To introduce students to some of the important literary texts of the world 2. To help them in gaining some insights into the socio-cultural aspects of the regions from where the texts are chosen. 3. To enable students to compare the authors of the world with Indian writers in English or the writers in their own languages.
MA-Part-II Sem.-IV	Paper 4.8: World Literature in English	<ol style="list-style-type: none"> 1. To introduce students to the various techniques employed by the authors and how the Techniques are adapted/adopted by Indian authors. 2. To help the students undertake research in comparative literature 3. To offer students glimpses of the representations of cultural diversities and technical experiments that the authors try to 4. Project in the selected works.

B.A. Economics

Class	Course	Course Outcomes
S.Y.B.A.	G-2 Financial System-I	<ol style="list-style-type: none"> 1. To understand fundamentals of modern financial system. 2. To understand the recent trends and developments in banking system. 3. To understand the role of the Reserve Bank of India in Indian financial system. 4. To provide the knowledge of various financial and non-financial institutions. 5. To provide the students the intricacies of Indian financial system for better financial decision making.
S.Y.B.A.	S-1, Micro Economics	<ol style="list-style-type: none"> 1. To develop an understanding about subject matter of Economics. 2. To impart knowledge of microeconomics. 3. To clarify micro economic concepts 4. To analyze and interpret charts, graphs and figures
	S-2, Macro Economics	<ol style="list-style-type: none"> 1. To introduce students to the historical background of the emergence of macroeconomics 2. To familiarize students with various concepts of national income 3. To familiarize students with the differences between microeconomics and 4. To introduce students to the role of money in an economy.
S.Y.B.Com.	Business Economics (Macro)	<ol style="list-style-type: none"> 1. To study the relationship amongst broad aggregates. 2. To impart knowledge of business economics. 3. To understand macroeconomic concepts. 4. To introduce the various concepts of National Income. 5. To familiarize the students to the basic theories and concepts of Macro Economics and their application.



M. A. Economics

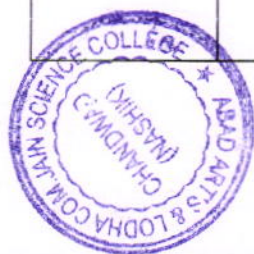
Sr. No.	Course	Course Outcome
MA-II (SEM.-III)	Macro Economics Analysis-I	<ol style="list-style-type: none"> To provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in real-life situations. To discuss the modern developments in macroeconomics.
	Growth & Development-I	<ol style="list-style-type: none"> To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc. To analyze and evaluate the obstacles in the process of economic growth and development
	Research Methodology-I	<ol style="list-style-type: none"> To enable an understanding of Research and its methods under various areas of economics. To demonstrate the practical and the applied aspects of research in relation to Economics.
	Demography	<ol style="list-style-type: none"> To provide an understanding of Demography and its application under various topics under economics. To demonstrate the practical and the applied aspects of Demography and the study of Population and its relation to Economics.
MA-II (SEM.-IV)	Macro Economics Analysis-II	<ol style="list-style-type: none"> To provide a thorough understanding of the principles of macroeconomics and the application of macroeconomic concepts in various contexts To discuss the modern developments in macroeconomics.
MA-II (SEM.-IV)	Growth & Development-II	<ol style="list-style-type: none"> To enable learning and understanding of the basic concepts and process to measure the growth and economic development etc. To analyze and evaluate the obstacles in the process of economic growth and development
	Research Project	<ol style="list-style-type: none"> To enable an understanding of Research and its methods under various areas of economics. To demonstrate the practical and the applied aspects of research in relation to Economics.
	Public Policy	<ol style="list-style-type: none"> Ability to analyze and evaluate the subject with reference to various aspects of Public Policy. Ability to develop an understanding of the public policy, its perspectives and processes and to be able to construct intellectual dialogue on the policy making and policy analysis and evaluation



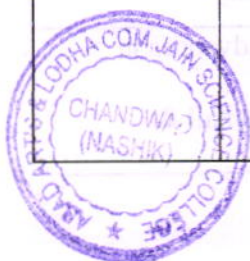
Faculty of Commerce

Bachelor of Commerce

Class	Course	Course Outcomes
S.Y.B.Com Sem. III	Business Comm. - I	<ol style="list-style-type: none"> 1. To understand the concept, process and importance of communication. 2. To acquire and develop good communication skills requisite for business correspondence. 3. To develop awareness regarding new trends in business communication. 4. To provide knowledge of various media of communication.
	Corporate Accounting - I	<ol style="list-style-type: none"> 1. To acquaint the student with knowledge about various Concepts, Objectives and applicability of some important accounting standards associated with to corporate accounting. 2. To empower to students with skills to interpret the financial statements in simple and summarized manner for effective decision making process. 3. To acquaint the student with knowledge about various Concepts, Objectives and applicability of some important accounting standards associated with to corporate accounting. 4. To empower to students with skills to interpret the financial statements in simple and summarized manner for effective decision making process.
	Business Management I	<ol style="list-style-type: none"> 1. To provide basic knowledge and understanding about various concepts of Business Management. 2. To help the students to develop cognizance of the importance of management principles. 3. To provide an understanding about various functions of management. 4. To provide them tools and techniques to be used in the performance of the managerial job.
	Elements of Company Law. I	<ol style="list-style-type: none"> 1. To develop general awareness of Elements of Company Law among the students. 2. To update the knowledge of Companies Act of 2013. 3. To apprise the students of new concepts involving in company law regime. 4. To impart students the provisions and procedures under company law.
	Cost and Works Accounting I	<ol style="list-style-type: none"> 1. To prepare learners to know and understand the basic concepts of cost. 2. To study will be understand the elements of cost. 3. To enable students to prepare a cost sheet. 4. To facilitate the learners to understand, develop and apply the techniques of inventory control.
	Business Entrep. I	<ol style="list-style-type: none"> 1. To understand the concepts in Business Entrepreneurship and its aspects 2. To make students aware about entrepreneur and entrepreneurship 3. To study the new age of entrepreneur and to know in details of entrepreneurship 4. To understand the creativity and innovation required or necessary in the entrepreneurship.



S.Y.B.Com Sem. III	Banking and Finance-I	<ol style="list-style-type: none"> 1. To provide the knowledge about Indian Banking System. 2. To create the awareness about the role of banking in economic development. 3. To provide the knowledge about working of Central Banking in India. 4. To know the functioning of private and public sector banking in India.
S.Y.B.Com Sem. IV	Business Comm. II	<ol style="list-style-type: none"> 1. To understand the concept, process and importance of communication. 2. To acquire and develop good communication skills requisite for business correspondence. 3. To develop awareness regarding new trends in business communication. 4. To provide knowledge of various media of communication.
	Corporate Accounting II	<ol style="list-style-type: none"> 1. Developing understanding on accounting procedure for Holding companies 2. Conceptual understanding ,Practical application skills in the process of accounting for Absorption 3. Practical understanding on Process of Liquidation on companies 4. To introduce the students with the recent trends in the field of accountancy
	Business Management II	<ol style="list-style-type: none"> 1. Students will get an idea about the basic motivational tools used in the field of management. 2. Students will get an idea about how leadership influences organizational success. 3. Students will understand the significance of coordination and control in modern business management. 4. Students will come across various emerging trends in management.
	Elements of Company Law. II	<ol style="list-style-type: none"> 1. To Acquaint knowledge and maturity to understand Company management 2. To Acquaint with knowledge and role of key managerial person of the Companies and Rules about CSR. 3. To get training in to various types of meeting and procedure. 4. To enhance skills and knowledge about the E- governance of the company and winding-up of the company
	Cost and Works Accounting II	<ol style="list-style-type: none"> 1. Understanding various methods used in the pricing of the issue of materials 2. Enabling to calculate wage payment and incentives. 3. Understanding the process of job analysis, job evaluation and merit rating. 4. Insight into recent processes used for cost reduction.
	Business Entrep. II	<ol style="list-style-type: none"> 1. Understanding the basics difference in Individual Entrepreneur and Group Entrepreneurship and details in SHG. 2. Students will identify the opportunities of entrepreneurship in the present market, in terms of production, trading or by providing services to the society. 3. Students will be able to study and investigate the entrepreneur or enterprise on micro level. 4. Students will practically study the Challenges in entrepreneurship development.
	Banking & Finance -II	<ol style="list-style-type: none"> 1. To provide the knowledge of Cooperative Banking in India 2. To analyze the functioning of Development Banking 3. To create the awareness about Banking Sector Reforms 4. To understand the role of various committees on Banking Sector Reforms.



Master of Commerce (M.Com.)

Class	Course	Course Outcomes
M.Com II Sem. III	Business Finance	<ol style="list-style-type: none"> To enable students to acquire sound knowledge of concepts, nature and structure of business finance. To study will be Corporate securities and sources of long term finance, working capital
	Research Methodology for Business	<ol style="list-style-type: none"> To acquaint the students with the areas of Business Research Activities To enhance capabilities of students to conduct the research in the field of business and social sciences To enable students, in developing the most appropriate methodology for their research studies. To make them familiar with the art of using different research methods and techniques
	Advanced Auditing	<ol style="list-style-type: none"> To impart knowledge and develop understanding of methods of auditing and their application. To Study will be audit under Computerized Information System (CIS) Environment
	Specialized Areas in Auditing	<ol style="list-style-type: none"> To impart knowledge and develop understanding of methods of audit in Specialized areas To Study Government System of Audit and Audit of Cooperative Societies
	Cost Audit	<ol style="list-style-type: none"> To provide adequate knowledge on Cost Audit Practices. To Study will be Cost Audit – Planning & Execution and Numerical Problems on Cost Audit
	Mgmt. Audit	<ol style="list-style-type: none"> To equip the students with the knowledge of the techniques and methods of planning and executing the Management Audit. To Study different Areas of Management Audit & Operational Audit
	Human Resource Mgmt.	<ol style="list-style-type: none"> To acquaint the students with in-depth knowledge of HRM. To inculcate among students various practices followed by HR managers
	Organizational Behavior	<ol style="list-style-type: none"> To make the students understand various concepts of organization behavior To provide in depth knowledge about process of formation of group behavior in an organization set up
M.Com II Sem. IV	Capital Market & Financial Services	<ol style="list-style-type: none"> To enable students to acquire sound knowledge, concept and structure of capital market and financial services. To Study will be Securities and Exchange Board of India (SEBI)
	Industrial Economic Env.	<ol style="list-style-type: none"> Industrial Economic Environment To study the effects of New Economic Policy
	Recent Adv. Accounting, Taxation & Auditing	<ol style="list-style-type: none"> To up-date the students with latest developments in the Subject To develop the ability to read, understand, interpret and Summarize various articles from newspapers, journals etc.
M.Com II Sem. IV	Recent Adv. in Cost Auditing & Cost System	<ol style="list-style-type: none"> To provide knowledge on recent advances in cost accounting and cost systems Study of Cost Associate with Finance of Any Company
	Recent Adv. in Business Practices Env.	<ol style="list-style-type: none"> To provide knowledge and understanding of recent advances in Business Practices. To Study Recent Scheme of Development of micro small & medium enterprises



Faculty of Science

B. Sc. – Botany

Class	Course Title	Course Outcomes
S.Y.B.Sc Semester III	Botany	1. BO 231: 2. Understand the classification, application, economical and biological importance of Angiosperms 3. To study relationship between plants & environment. 4. BO 232: To study various metabolic processes in plants like transpiration, ascent of sap, physiology of flowering etc. 5. BO 233: To gain practical knowledge of various plant families as well as metabolic processes.
S.Y.B.Sc Semester IV	Botany	1. BO 241: To study anatomy & embryology of plants. 2. BO 242: To study plant tissue culture, plant genetic engineering, genomics, proteomics and bioinformatics. 3. BO 243: To gain practical knowledge of various tissues, embryo & techniques used in plant tissue culture, plant genetic engineering, genomics, proteomics and bioinformatics.

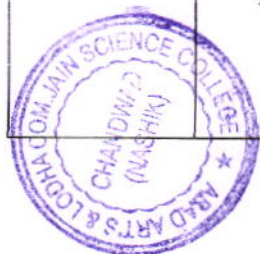
M. Sc. - Botany

Class	Course	Course Outcomes
M.Sc. II Sem.- III	BOUT 231: Computational Botany	1. Statistical knowledge helps to use the proper methods to collect the data, apply the correct analysis and effectively interpret the result.
	BOUT 232: Developmental Biology	1. Brief studies of different process of plant development.
	BOUT 233: Industrial Botany	1. Plant physiology is a sub discipline of botany concerned with the functioning, Physiology of plants.
	BOUT 234: Seed Science	1. Advance knowledge of seed marketing.
M.Sc. II Sem. - IV	BOUT 241: Botanical Techniques	1. Understanding of various techniques used in Botany.
	BOUT 242: Plant Ecology	1. Study of environmental impact assessment and audit.
	BOUT 243: Plant Tissue Culture	1. Introduction to Pharmacognocny, Ayurveda formulation etc.
	BOUT 244: Research Methodology	1. Research orientation of students.



B. Sc. (Electronic Science)

Class	Course	Course Outcomes
S. Y. B. Sc. Sem.-III	EL-231 Paper – I Comm. Electronics	<ol style="list-style-type: none"> 1. Understand different blocks in communication systems, types of noise in communication systems and its different parameters 2. Understand need of modulation, modulation process and amplitude modulation and demodulation methods 3. Analyze generation of FM Modulation and demodulation methods and comparison between amplitude and frequency modulation 4. Identify different radio receivers and their performance parameters. 5. Solve problems based on AM and FM performance parameters 6. Compare pulse modulation techniques such as PAM, PPM, PWM and compare TDM and FDM techniques used in communication 7. Understand need of sampling and sampling theorem as well as know about performance parameters of digital communication 8. Analyze difference between ASK, FSK , PSK as well as PCM and its applications
	EL-232 Paper- II Digital Circuit Design	<ol style="list-style-type: none"> 1. Distinguish between different logic families based on their performance parameters 2. Analyze basic combinational logic circuits for simple applications 3. Design combinational logic circuits using K maps for identified applications 4. Design Sequential logic circuits using state diagram, excitation table for identified applications 5. Understand and compare different types of ADC and their performance parameters using data sheets/manuals 6. Understand and compare different types of DAC and their performance parameters using data sheets/manuals
	EL-233 Paper- III Practical Course	<ol style="list-style-type: none"> 1. Describe and explain the techniques of generation of AM/ FM and demodulation 2. Design FSK generation using standard IC XR 2206 referring data manuals 3. Describe and explain the TDM/ FDM generation technique 4. Demonstrate PPM/PWM/PAM and PCM techniques using standard circuits in data manuals 5. Design and build minimum complexity digital circuits using logic gates 6. Design and analyze different combinational and sequential logic circuits using standard ICs in data manuals 7. Design ADC/ DAC using data manuals and study its performance parameters
S. Y. B. Sc. Sem.-IV	EL-241 Paper - I Analog Circuit Design	<ol style="list-style-type: none"> 1. Design single/multistage amplifier using transistor and analyze their frequency response on gain-bandwidth product due to coupling /bypass capacitors 2. Classify and compare different power amplifiers 3. Understand and design push pull amplifier and need of heat sinks 4. Distinguish between Opamp Feedback circuits based on their configurations 5. Analyze the effect of negative and positive feedback on characteristics of Opamp 6. Understand and analyze the need of positive feedback in oscillator circuits 7. Design , develop and build circuits for identified applications



	<p>EL-242: Paper II: Micro controller and Python Programming</p>	<ol style="list-style-type: none"> 1. Identify the features and architectural details of microcontroller (Arduino) 2. Write code/program using open source programming language (Arduino) for basic identified applications 3. Understand programming basics of python programming language 4. Understand special features of python programming language such as importing modules, directory, tuples 5. Design , build and implement applications using Arduino & python
	<p>EL-243: Paper- III: Practical Course</p>	<ol style="list-style-type: none"> 1. Describe and explain the design procedure of different types of active filters and analyze its frequency response 2. Demonstrate positive feedback for oscillator circuits using standard Ics 3. Describe and explain design procedure for two stage amplifiers and application circuits 4. Design practical circuits for identified applications 5. Develop working setup and write programs using programming techniques of Arduino 6. Demonstrate and explain interfacing hardware to Arduino microcontroller 7. Solve problems using programming techniques of python

M. Sc. (Electronic Science)

Class	Course	Course Outcomes
<p>M. Sc. Sem.-I</p>	<p>ELUT111: Mathematical Methods in Electronics using C</p>	<ol style="list-style-type: none"> 1. To get familiar with role of differential equations in applied electronics 2. To know about mathematical tools and techniques for network analysis 3. To learn the methods of analysis for CT and DT signals and systems 4. To learn concept of mathematical modeling of simple electrical circuits 5. To solve mathematical methods using C programming 6. To learn various advanced features, graphics and interfacing 7. To learn concepts of object oriented programming in C++
<p>M. Sc. Sem.-I</p>	<p>ELUT112: Analog Circuit Design</p>	<ol style="list-style-type: none"> 1. To learn the characteristics and working of electronic devices 2. To study the various device models 3. To study the wideband and narrowband amplifiers using BJT 4. To develop skills in analysis and design of analog circuits
	<p>ELUT113: Digital System Design</p>	<ol style="list-style-type: none"> 1. To study the designs of opamp applications 1. To understand sequential and combinational logic design techniques 2. To introduce VERILOG 3. To learn various digital circuits using VERILOG 4. 4. To learn PLD, CPLD, FPGA and their applications
	<p>ELDT114: Fundamentals and applications of PIC micro controllers</p>	<ol style="list-style-type: none"> 1. To understand the basic structure of PIC microcontroller 2. To understand the assembly language programming for PIC 5. 3. To understand the hardware interface with PIC



M. Sc. Sem.-I	ELDP114: Practical Course 1 (Elective Subject 1)	<ol style="list-style-type: none"> 1. To learn the two-digit 7-segment display(multiplexed) interfacing 2. To learn the LCD / keyboard Interfacing 3. To learn the Bidirectional stepper motor interfacing 4. To learn the Real Time Clock display on LCD / HyperTerminal (I2C) 5. To Use of internal EEPROM
	ELUP115: Practical Course 2	<ol style="list-style-type: none"> 1. Students acquire the skill of designing different analog circuits such as Tuned amplifier, Bootstrap ramp generator etc. 2. Learn to design Instrumentation amplifier for a given gain. 3. Design and tested Multiplexed display used for Bank token / two digit counter 4. Learn the code conversion from binary to gray and vice-versa. 5. Learn to generate Waveform using quadrature oscillator, Bubba oscillator. 6. To learn Two digit combinational lock 7. Learn to design Combinational Logic, Parity Generator and checker, Hamming Code Generator and Manchester code Generator using VERILOG
M. Sc. Sem.-II	ELUT121: Applied Electro magnetics, Microwaves and Antennas	<ol style="list-style-type: none"> 1. To introduce to students the concepts of electromagnetics 2. To understand the theory of transmission lines and wave guide 3. To study various parameters of antennas 4. To study various methods of generation of microwaves
	ELUT122: Instrumen- tation and Measurement Techniques	<ol style="list-style-type: none"> 1. To understand the configurations and functional descriptions of measuring instrument 2. To understand the basic performance characteristics of instruments 3. To understand the working principles of various types of sensors and transducers and their use in measuring systems 4. To study the techniques involved in various types of instruments 5. To understand the relevance of electronics with other disciplines
	ELUT123: Foundation of Semi- conductor Devices	<ol style="list-style-type: none"> 1. To introduce crystal structure with reference to Semiconductor 2. To introduce quantum and statistical mechanics 3. To understand the characteristics of Semiconductors devices 4. To introduce theory of diode, transistor and FETs
	ELDT124: Fundamentals & application of AVR micro controllers	<ol style="list-style-type: none"> 1. To understand the architecture, assembly language and interfacing of AV 2. To learn embedded C programming 3. To learn software techniques to embed codes in to the systems
	ELDP124: Practical Course 3 (Elective course 2)	<ol style="list-style-type: none"> 1. Interfacing of LED array to generate different sequences, 2. Use of timer for delay generation 3. Matrix Keyboard interface with LCD 4. DAC interfacing (sine, staircase, triangular, square wave) use of timer 5. Use of ADC 6. DC motor control using PWM / Intensity control of LED with CCP



<p>M. Sc. Sem.-II</p>	<p>ELUP125: Practical Course 4 (Compulsory Course)</p>	<ol style="list-style-type: none"> 1. Displacement measurement using LVDT, signal conditioning and DPM 2. Temperature measurement using PT100, signal conditioning and DPM 3. Temperature measurement using thermocouple with cold junction compensation 4. Design build and test IR transmitter and receiver (TSOP1738 or similar) for object detection 5. To determine the standing wave ratio and reflection coefficient of a given waveguide 6. To plot directivity pattern of a given antenna 7. To determine a characteristics of a micro strip transmission line 8. Design and test Yagi-Uda antenna with power reflectors
<p>M. Sc. Sem.-III</p>	<p>ELT231: Advanced communication systems</p>	<ol style="list-style-type: none"> 1. Analyze continuous wave/analog method of communication (AM, FM and PM) considering noise, its generation and demodulation techniques 2. Compare different pulse modulation techniques (analog as well as digital) 3. Analyze digital modulation techniques and related correction methods 4. Distinguish different radio wave propagation techniques 5. Understand basic theory of antenna and their types as per applications 6. Understand basics of modern communication techniques like satellite communication and mobile communication
	<p>ELT232: Mechatronics and robotics</p>	<ol style="list-style-type: none"> 1. Identify different components or blocks in any mechatronic system 2. Analyze mechatronic systems using system models and dynamic responses using transformation methods 3. Distinguish different sensing and actuating mechanisms used in mechatronics and robotic systems 4. Compare different control mechanisms used in robotic systems
	<p>ELT233: Control System</p>	<ol style="list-style-type: none"> 1. Compare different control loop systems such as open loop, closed loop, DCS, SCADA etc. 2. Analyze the control systems using different mathematical techniques such as transfer function and different stability criterion 3. Analyze and Distinguish different types of analog and digital controllers and control modes 4. Identify components of control systems 5. Design, develop and implement control systems for given applications
	<p>ELT234: Fundamentals of Internet of Things</p>	<ol style="list-style-type: none"> 1. Understand framework of Internet of things 2. Identify architecture, structure and security as well as privacy aspects in IoT 3. Design and configure RFID and WSN networks considering security issues
	<p>ELP234: Elective Practical Course</p>	<ol style="list-style-type: none"> 1. Install and implement IoT systems using different microcontrollers 2. Demonstrate interfacing of LED, Buzzer, button and sensors to microcontrollers 3. Design, develop and implement IoT systems for basic applications such as ON/OFF LED etc. 4. Understand methodology to design IoT systems

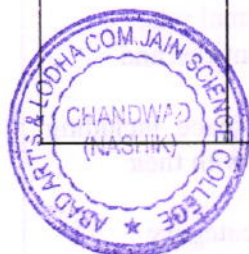


	ELP235: compulsory practical course	<ol style="list-style-type: none"> 1. Design and develop AM and FM transmission system 2. Design and implement digital modulation systems and pulse modulation techniques 3. Set up and implement mechatronic systems such as flow control or servo control using basic components like motors, sensors and actuators 4. Design , develop and implement controller circuits for identified applications
	ELP241*: Industrial training	<ol style="list-style-type: none"> 1. Understand upcoming requirements in industry/institutions 2. Adopt to new techniques or upcoming technologies 3. Analyze the problem and solve using different techniques 4. Requirement of skills in industry environment
	ELT242: MOOCs courses	<ol style="list-style-type: none"> 1. Manage their own time in order to develop their intrinsic motivation and commitment to the course 2. Ensure that the duration of the course is no longer than 8 weeks and remain in and complete shorter MOOCs 3. Transfer credits from MOOCs into institutional degree programs 4. Foster self-directed learning environments to expand students' autonomy, encourage them to complete their weekly assignments, and provide opportunities for students with limited computer and language skills.
M. Sc. Sem.-IV	ELT243: Technical writing	<ol style="list-style-type: none"> 1. Utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions. 2. Understand the nature and objective of Technical Communication relevant for the work place 3. Imbibe inputs by presentation skills to enhance confidence in face of diverse readers. 4. Evaluate and present gist of the books in the form of book review 5. Prepare documents for thorough understanding of applications and promote their technical competence
	ELP244: Project/Interns hip	<ol style="list-style-type: none"> 1. Gain experience in writing Technical reports/projects 2. Expose to the responsibilities and ethics in industrial environment 3. Familiarize with various materials, processes, products and their applications along with relevant aspects of quality control. 4. Attain academic, professional and/or personal development 5. Develop as future employers/entrepreneurs 6. Understand the social, economic and administrative considerations that influence the working environment of industrial organizations 7. Understand the psychology of the workers and their habits, attitudes and approach to problem solving



B.Sc. Mathematics

Class	Course	Course Outcomes
S. Y. B. Sc. Sem. I	MT 211 Multivariable Calculus I	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Have understood the topics that include functions of several variables, graph and level curves and should be able to draw their graphs in anyone of the mathematics softwares 2. Evaluate limits of multivariable functions, examine the continuity of functions of several variables, learn the theory of partial derivatives and its graphical meaning and be able to find partial derivatives, gradient vectors, differentials, directional derivatives and solve problems involving tangent planes and normal lines. 3. Locate extreme values of functions of several variables using different tests 4. To change variables in multiple integrals, Compute double integrals in polar coordinates compute triple integrals in Cartesian coordinates, cylindrical coordinates and spherical coordinates, apply double and triple integral to find area and volume respectively.
S. Y. B. Sc. Sem. I	MT 212(A): Discrete Mathematics	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Understand the correct meaning of given mathematical statements, use correct terminologies and notation while writing any mathematics article, be able to prove if the two mathematical statements are equivalent or not 2. Using logical equivalences and truth table students should be able to decide whether the given argument is valid, communicate effectively in both written and oral form 3. Learn various methods of proofs, find counter example to prove that a proposed mathematical sentence is false, write clear and precise proofs 4. Solve various counting problems, distribution problems using sum rule, multiplication rule, division rule, permutation and combination with or without repetition 5. Understand the inclusion and exclusion principles and its applications
S. Y. B. Sc. (Sem. II)	Linear Algebra	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Define vector space, linear dependence, basis and dimension, vector subspace, examples To know Necessary and sufficient condition for subspace, vector space as a direct sum of subspaces 2. Have understood the topics that include Inner product, norm as length of a vector, distance between two vectors, orthonormal basis, orthonormal projection, Gram Schmidt process of orthogonalization, null space, range space, rank, nullity, Sylvester Inequality 3. Learn definition, examples, properties of linear transformations, equality of linear transformations, kernel and rank of linear transformations, composite transformations 4. To find kernel and rank of linear transformations, composite transformations Inverse of a linear transformation, Matrix of a linear transformation, change of basis, similar matrices.



S. Y. B. Sc (Sem. II)	Numerical Methods and It's Applications	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Find Errors and Their Computations, Rounding off numbers to n significant digits, to n decimal places, absolute, relative and percentage errors, know general error formula. 2. Learn Bisection method, the method of false position, the iteration method, Aitken's Δ process, Newton- Raphson Method. 3. Learn finite Difference Operators and their relations, Detection of Errors using difference table, Differences of a polynomial ,Newton's Interpolation Formulae (Forward and Backward), Lagrange's Interpolation Formula, Divided differences and Newton's <i>General Interpolation formula</i> 4. Understand Fitting a Straight Line , Nonlinear curve fitting: Power function ,polynomials of degree 2 and 3, Exponential function, Numerical Differentiation ,Numerical Integration, General quadrature formula, Trapezoidal rule, Simpsons's rule.
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M.Sc. Mathematics

Class	Course	Course Outcomes
	MT 701 Combinatorics	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. learn the counting principles, solve numerous arrangements and selections problems with and without repetition, find solutions of distribution problems 2. use generating functions to solve a variety of combinatorial problems 3. explain recurrence relations, recurrence relation models, divide and conquer relations, solution of linear and inhomogeneous recurrence relation, solution with generating functions 4. Find solution of some counting problems with Venn diagrams, inclusion-exclusion formula restricted positions and Rook polynomials.
M.Sc. II (Sem. III)	MT 702 Field Theory	<ol style="list-style-type: none"> 1. Learn the concept of field extension to a good extent, understand different types of fields viz. splitting field, normal field, algebraically closed field, determine algebraic and transcendental numbers 2. Determine splitting and normal field of given polynomials, compute degree of extension, learn the problem of solvability by radicals 3. Understand the fundamental concept of Galois theory and find Galois group of polynomials, determine if the field extension is a Galois extension 4. Describe separable and inseparable extensions in detail, explain cyclotomic polynomials and its applications 5. Understand why geometric constructions: squaring a circle, doubling a cube and trisecting angle are impossible by using compass and scale.
	MT 703 Functional Analysis	<ol style="list-style-type: none"> 1. Have a demonstrable knowledge of the properties of a Hilbert space, including orthogonal complements, orthonormal sets, complete orthonormal sets together with related identities and inequalities. 2. Describe the theory of linear operators on a Hilbert space, including adjoint operators, self adjoint and unitary operators with their spectra. 3. explain the role of completeness through the Baire category theorem and its consequences for operators on Banach spaces



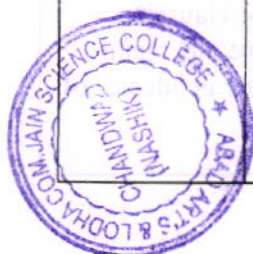
M.Sc. II (Sem. III)	MT 704 Graph Theory	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Understand the definition and types of graphs like simple graph, complete graph, bipartite graph, Eulerian graph, Hamiltonian graph, planar graph, non-planar graph with various example 2. Represent graph in matrix form and find Eigen values of graph and its application in different areas of mathematics 3. Solve transportation problem, Chinese postman problem, travelling salesman problem, application of hand shaking lemma, find shortest spanning tree in a weighted graph 4. Apply algorithms for finding a maximum matching and a maximum weight matching in a bipartite graph.
	MT707 Topics in Analysis	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Classify integral equations and apply functional analytic methods on operators and integral equations 2. Analyze the methods such as integral transforms, Green's function, and the concept of resolving, uniqueness theorems, and Fred Holm theory. 3. Understand the applications of the theory of integral equations to other disciplines like applied mathematics, science and engineering.
M.Sc. II (Sem. IV)	MT 801 Number theory	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Understand thoroughly the concepts of divisibility in integers, properties of primes, find gcd, lcm of any pairs of integers and prove related results. 2. Explain the relation of congruence in integers, state and prove some famous theorems viz. Fermat's and Euler's theorems, Wilson's Theorem, Chinese remainder Theorem and solve equations involving congruence 3. Describe and apply some special function viz. Euler function, Greatest integer function, Divisor function $d(n)$, Mobius function $m(n)$ and prove their properties and related results 4. Understand the concepts of quadratic reciprocity Quadratic residue, Legendre's symbol, its properties, quadratic reciprocity law, Jacobi symbol and its properties. 5. Find solutions of some Diophantine equations, explain algebraic numbers and algebraic number fields
	MT 802 Differential Geometry	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Understand the concept of curvature of a space curve and signed curvature of a plane curve., state and prove fundamental theorem for plane curves, find the normal curvature of a surface, understand its connection with the first and second fundamental form and Euler's theorem 2. Understand the Weingarten Equations, mean curvature and Gaussian curvature, explain geodesics as distance minimizing curves on surfaces, find graphs and level curves, use Riemannian metrics on given manifolds to calculate volumes, the Levi-Civita connection, curvatures, geodesics, with emphasis on surfaces 3. Calculate critical point indices of a differentiable map on a given manifold, and use this to describe its topological properties 4. Prove that a connected compact surface with constant Gaussian curvature is a sphere, calculate the Gaussian curvature, the mean curvature, the curvature lines, the asymptotic lines, the geodesics of a surface.



M.Sc. II (Sem. IV)	MT803 Fourier Analysis and boundary value problems	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Understand the Fourier series representation of periodic functions. 2. Demonstrate how differential equation can be useful in many types of problems like's heat equations, wave equations. 3. Understand how the wave and diffusion partial differential equations can be used to model certain systems, determine appropriate simple boundary and initial conditions for such models.
	MT 804 Lattice Theory	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Define and formulate linear programming problems and appreciate their limitations. 2. Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained and translate solutions into directives for action 3. Develop mathematical skills to analyze and solve integer programming and network models arising from a wide range of applications.
	MT810 Applied Mathematics	<p>On completion of this course students will be expected to</p> <ol style="list-style-type: none"> 1. Be able to give real-life examples illustrating the main ideas of the course (such as equilibrium, stability, bifurcations) 2. Be able to describe qualitatively the behavior of the solution of a dynamical system without necessarily finding the exact solution. 3. Find equilibrium in 1D, 2D and 3D systems and determine their local stability using linear analysis or graphical means. 4. Interpret result in applications 5. Draw phase portraits and interpret them in several applications from biology, physics, chemistry and engineering. 6. Identify various types of bifurcations (saddle-node, trans critical, super- and sub-critical pitchfork, Hopf) in 1D and 2D systems. 7. Be able to non-dimensionalize dynamical systems and determine the relevant parameters.

B.Sc. Chemistry

Class	Course	Course Outcomes
S.Y.B.Sc. Sem. III	CH- 101: Physical Chemistry	<ol style="list-style-type: none"> 1. Students will be able to apply thermodynamic principles to physical and chemical process 2. Third law of thermodynamic and its applications 3. Knowledge of Chemical equilibrium will make students to understand, Relation between Free energy and equilibrium and factors affecting on equilibrium constant. Exergonic and endergonic reaction. Gas equilibrium, equilibrium constant and molecular interpretation of equilibrium constant. Van't Haff equation and its application 4. Ionic equilibria chapter will lead students to understand , Concept to ionization process occurred in acids, bases and pH scale ,Related concepts such as Common ion effect hydrolysis constant, ionic product, solubility product , Degree of hydrolysis and pH for different salts , buffer solutions
	CH- 102: Organic Chemistry	<ol style="list-style-type: none"> 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 the main subject. 3. To familiarize with current and recent developments in Chemistry. 4. To create foundation for research and development in Chemistry.



S.Y.B.Sc. Sem. III	CH- 103: Chemistry Practical Course	<ol style="list-style-type: none"> 1. Importance of chemical safety and Lab safety while performing experiments in laboratory 2. Determination of thermo chemical parameters and related concepts 3. Students should learn Techniques of pH measurements 4. Student should learn Preparation of buffer solutions 5. Student should learn Elemental analysis of organic compounds (non instrumental) 6. Student should learn Chromatographic Techniques for separation of constituents of mixtures
	CH- 202: Analytical Chemistry	<ol style="list-style-type: none"> 1. Student should learn Calculations of mole, molar concentrations and various units of concentrations which will be helpful for preparation of solution ,Relation between molecular formula and empirical formula, Stoichiometric calculation iv. Define term mole, mill mole, molar concentration, molar equilibrium concentration and Percent Concentration. v. SI units, distinction between mass and weight, Units. 2. Student should learn, pH meter and electrodes for pH measurement, working of pH meter, Applications of pH meter. 3. Student should learn Basics of chromatography and types of chromatography, Paper and Thin Layer Chromatography
	CH- 203: Chemistry Practical –II	<ol style="list-style-type: none"> 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
S.Y.B.Sc. Sem. IV	CH-301: Physical and Analytical Chemistry	<ol style="list-style-type: none"> 1. Student should Explain / discuss the term energy of activation with the help of energy diagram. 2. Student should explain temperature coefficient and effect of temperature on rate constant k. 3. Student should learn adsorption results in the light of Langmuir adsorption isotherm, Freundlich's adsorption Isotherm and BET theory. 4. Students learn to apply the methods of expressing the errors in analysis from results. 5. Students learn to apply statistical methods to express his / her analytical results in laboratory. 6. Students learn to apply volumetric methods of analysis to real problem in analytical chemistry / industry
	CH-302: Inorganic and Organic Chemistry	<ol style="list-style-type: none"> 1. Student learns to Explain and apply LCAO principle for the formation of MO's from AO's. Student learns to explain formation of different types of MO's from AO's. 2. Students learn about coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand, chelate effect, etc.) Explain Werner's theory of coordination compounds. Differentiate between primary and secondary valence. Correlate coordination number and structure of complex ion. 3. Students learn to Apply IUPAC nomenclature to coordination compound. 4. Identify and draw the structures aromatic hydrocarbons from their names or from structure name can be assigned. Students able to Explain / discuss synthesis of aromatic hydrocarbons. 5. Students learn to correlate reagent and reactions. And also learn about alcohol, phenol ether



<p>CH-303: Practical Chemistry-III</p>	<ol style="list-style-type: none"> 1. Verify theoretical principles experimentally. 2. Interpret the experimental data on the basis of theoretical principles. 3. Correlate theory to experiments. Understand/verify theoretical principles by experiment observations; explain practical output / data with the help of theory. 4. Understand systematic methods of identification of substance by chemical methods. 5. Write balanced equation for the chemical reactions performed in the laboratory. 6. Perform organic and inorganic synthesis and is able to follow the progress of the chemical reaction by suitable method (color change, ppt. formation, TLC).
<p>CH-401: Physical and Analytical Chemistry</p>	<ol style="list-style-type: none"> 1. Define the terms in phase equilibrium such as- system, phase in system, components in system, degree of freedom, one / two component system, phase rule, etc. 2. Define various terms, laws; differentiate ideal and no-ideal solutions. Discuss / explain thermodynamic aspects of Ideal solutions-Gibbs free energy change, Volume change, Enthalpy change and entropy change of mixing of Ideal solution. 3. Discuss / explain solubility of partially miscible liquids- systems with upper critical. Solution temperature, lower critical solution temperature and having both UCST and LCST 4. Explain / discuss concept of distribution of solute amongst pair of immiscible solvents. 5. Explain / define different terms in conductometry such as electrolytic conductance, resistance, conductance, Ohm's law, cell constant, specific and equivalent conductance, molar conductance, Kohlrausch's law, etc.
<p>CH-402: Inorganic and Organic Chemistry</p>	<ol style="list-style-type: none"> 1. Apply principles of VBT to explain bonding in coordination compound of different geometries 2. Apply crystal field theory to different type of complexes (Td, Oh, Sq, Pl complexes) 3. Identify and draw the structures aldehydes and ketones from their names or from structure name can be assigned. 4. Explain /Discuss important reactions of carboxylic acids and their derivatives 5. Define terms such as axial hydrogen, equatorial hydrogen, confirmation, substituted cyclohexane, etc. 6. Draw structures of different conformations of methyl / t-butyl mono substituted cyclohexane (axial, equatorial) and 1, 2 dimethyl cyclohexane.
<p>CH-403: Practical Chemistry-IV</p>	<ol style="list-style-type: none"> 1. Verify theoretical principles experimentally 2. Interpret the experimental data on the basis of theoretical principles. 3. Correlate the theory to the experiments. Understand / verify theoretical principles by experiment or explain practical output with the help of theory. 4. Understand systematic methods of identification of substance by chemical methods. 5. Write balanced equation for all the chemical reactions performed in the laboratory. 6. Perform organic and inorganic synthesis and able to follow the progress of the chemical reaction. 7. Set up the apparatus properly for the designed experiments. 8. Perform the quantitative chemical analysis of substances and able to explain principles behind it



M.Sc. II Analytical Chemistry

Class	Course	Course Outcomes
M.Sc. – II Sem. III	CHA-390 : Electro analytical & Radio analytical methods of analysis	<ol style="list-style-type: none"> 1. Study of colorimeter, Faraday 1st law, Faraday 2nd law. 2. Study of voltammetry and paleographic method of analysis, hetero dynamic voltammetry, plus paleography and cyclic voltammetry. 3. Study of amperometry and their applications. 4. Learn radio analytical methods of analysis, activation analysis, 1. Isotope dilution analysis, radio metric titration. 5. Understand thermal methods of analysis TGA, DTA, DSC.
	CHA-391: Pharmaceutical analysis	<ol style="list-style-type: none"> 1. Study of apparatus for test and assay, cleaning of glassware, role of FDA in pharmaceutical industry. 2. Learn biological test and assay, microbiological test and assay, 6. Physical test, determination, limits test sterilization. 3. Analysis of vegetable drug, sources of impurities in pharmaceutical raw materials and finished products. 4. Learn standardization and quality control of different raw materials.
	CHA-392: Advanced Analytical techniques	<ol style="list-style-type: none"> 1. Study the classical approach for aqueous extraction, solid phase extraction, micro extraction and SFE. 2. Learn: AAS, FES, ICPAES, and DCP. 3. Study atomic fluorescence, resonant ionization and LASER based enhanced ionization. 4. Study of different detectors and their applications.
	CHA-380: Geochemical & alloy analysis & analytical Method develop. & validation.	<ol style="list-style-type: none"> 1. To understand assay validation and inter laboratory transfer. 2. Study the statistical analysis and analytical figure. 3. Learn the analysis of geological materials and alloys. 4. Study the analysis of soil, sampling, chemical analysis as a measure of Soil fertility.
M.Sc. – II Sem. IV	CHA-490 Analytical spectroscopy	<ol style="list-style-type: none"> 1. Study of ESCA, Detectors and their applications. 2. Learn X-ray method of analysis, numerical problems. 3. Understand an introduction to microscopy, its applications. 4. Study of chemiluminescence, Fluorescence and phosphorescence. 5. Study of NMR spectroscopy.
	CHA-491 Analytical methods for analysis of fertilizer detergent, water & poly.	<ol style="list-style-type: none"> 1. Study of analysis of fertilizer, sampling and sample preparation, 1. Kjeldal's method. 2. Understand the analysis of soap and detergents, UV-spectroscopic analysis of detergent. 3. Study of water pollution and analysis of polluted water. 4. Learn the polymer chemistry, analysis and testing of polymer, 5. Measurement of molecular weight and size. 6. Understand paint and pigment analysis
	CHA-492 Pollution monitoring and control and analysis of body fluid	<ol style="list-style-type: none"> 1. Study of pollution monitoring, removal of heavy toxic metals Cr, Hg, Cd, Pb, As. 2. Learn the removal of particulate matters, SO₂ And NO_x 3. Study the collection of specimen blood, urine, faces. 4. Learn the analysis of blood and urine, Vitamin in body fluid. 5. Study the liver function and kidney function test
	CHA-481 Analytical toxicology and food analysis.	<ol style="list-style-type: none"> 1. Study of acute poisoning, clinical toxicology. 2. Learn the isolation, identification and determination of narcotics, stimulants and depressants. 3. Study classification function, analysis of carbohydrate, Protein, lipid. 4. Study food preservatives, identify determination, & Composition.

M.Sc. – II Sem. IV	CHA-387 Analysis of materials	<ol style="list-style-type: none"> 1. Study the gravimetric and volumetric analysis of ores and alloy. 2. Prepare a various inorganic complexes and determine its % purity. 3. Preparation of nonmaterial. 4. To understand the chromatographic techniques. 5. Estimation of Iron by Various methods.
	CHA-487 Instrumental Analysis.	<ol style="list-style-type: none"> 1. Spectral analysis best on instrumental techniques. 2. Spectral analysis best on instrumental techniques. 3. Study of Conduct meter, FES, Polarography. 4. Analysis of riboflavin by photoflurometry. 5. To Study the spectroscopic techniques. 6. To study the <i>terbidometry</i> and <i>Neflometry</i>.
	CHA-488- Single stage preparations by Green synthesis	<ol style="list-style-type: none"> 1. Study the dissolution of tablet. 2. Learn the spectroscopic techniques. 3. Study Volumetric and gravimetric estimation 4. Analysis of Quinine sulphate by photoflurometry 5. Study of folin Wu method.

M.Sc. Organic Chemistry

Class	Course	Course Outcomes
M.Sc. II Sem. III	CHO-350 Organic reaction mechanism	<ol style="list-style-type: none"> 1. Study of carbanion-formation, stability and related name reaction, enemies and its applications. 2. Understand the NGP. 3. Learn the carbines and nitrenes. 4. Study of free radicals: generation of radicals, Nucleophilic electrophilic radicals, inter and intra molecular C-C bond formation via mercuric hydride. 5. Study of oxidative coupling and S_NAr reaction.
	CHO-351 Spectroscopic methods in structure determination	<ol style="list-style-type: none"> 1. Study 1H NMR Spectroscopy: Chemical Shift, deshielding, correlation for protons bonded to carbon and other nuclei. 2. Study of 13C NMR spectroscopy: FT- NMR, type of 13C NMR spectra, proton decoupled, off resonance, APT, INEPT, DEPT, Chemical shift, nuclear and hetero nuclear coupling constant 3. 2D NMR techniques: COSY, homo and hetero nuclear 2D resorts spectroscopy, NOESY and the applications 4. Study of mass spectrometry: Instrumentation, various methods of ionization, SIMS, FAB, MALDI. Different detectors rules of fragmentations of different functional groups
	CHO-352 Organic stereo chemistry	<ol style="list-style-type: none"> 1. Study of stereochemistry of six member ring. 2. Learn the stereochemistry of rings other than six members. 3. Understand fused bridge and Caged rings. 4. Learn resolution of racemic modification, stereochemistry of organic compound using NMR. 5. Determine geometrical isomerism and stereochemistry of olefins.
	CHO-353 Photo Chemistry, Pericyclic reaction and heterocyclic chemistry.	<ol style="list-style-type: none"> 1. Study of photochemistry: Carbonyl compounds, alkenes, dienes, polyenes and aromatic compounds. 2. Study photo rearrangement Barton reaction, application of photochemical reaction. 3. Learn Pericyclic reaction: Electro cyclic, Cycloaddition, and Ene Reaction, analysis by correlation diagram, FMO approach and ATS concept. 4. Study of heterocyclic chemistry: Five and six member heterocyclic with one or two hetero atoms. 5. Understand condensed five and six member's heterocyclic. 6. Study the synthesis, and importance of heterocyclic compounds.



M.Sc. II Sem. IV	CHO-450 Chemistry of natural product	<ol style="list-style-type: none"> 1. Study structure and stereochemistry of hardwickii acid, camptothecin and podophyllotoxin. 2. Study the synthesis of taxol, estorne and mifepristone, fredericamycin A. 3. Learn biogenesis terpenoides, alkaloids and shikimate pathway.
	CHO-451 Advance synthetic organic chemistry	<ol style="list-style-type: none"> 1. Study of transition metal complexes in organic synthesis. 2. Learn C=C formation reaction, multi compound reaction, ring formation reaction. 3. Study of sharpless azides Cycloaddition, use of boron and silicon in organic synthesis.
	CHO-452 Carbohydrate and chiral approach, chiral drugs and medicinal chemistry.	<ol style="list-style-type: none"> 1. Study of carbohydrates: Introduction of sugar, structure of triose tetrosa, panctose, hexoes, stereochemistry of glucose. 2. Understand the chiral approach, concept of chiral templates, and utilization of the basic concept for retrosynthetic strategy. 3. Study of chiral drug. 4. Learn medicinal chemistry, the action and discovery. 5. Study the structure activity and drug targets. 6. Study of antimicrobial drugs, antibacterial, antifungal, antiviral, antimalarial etc.
	CHO-453 Designing Organic synthesis and asymmetric synthesis.	<ol style="list-style-type: none"> 1. Study the design of organic synthesis, protection deprotection of hydroxyl, amino carboxyl, ketones and aldehyde. 2. Learn retrosynthesis. 3. Understand the principle and application of asymmetric synthesis. 4. Study of Cram's rule, Felkin-Anh rule, Cram's chelate model asymmetric synthesis using chiral reagent.
	CH-O-347 Single stage preparations	<ol style="list-style-type: none"> 1. Spectral analysis best on instrumental techniques. 2. Preparation of organic compounds, their purifications and run TLC. 3. Determination of physical constant: Melting point, Boiling point. 4. Different separation techniques
	CH-O-447 Two stage preparation	<ol style="list-style-type: none"> 1. Spectral analysis best on instrumental techniques 2. Preparation of organic compounds, their purifications and run TLC. 3. Determination of physical constant: Melting point, Boiling point. 4. Different separation techniques.
	CH-O-448 Single stage preparations by	<ol style="list-style-type: none"> 1. Spectral analysis best on instrumental techniques. 2. Preparation of organic compounds, their purifications and run TLC. 3. Determination of physical constant: Melting point, Boiling point

B. Sc. (Zoology)

Year	Course	Course Outcomes
S. Y. B. Sc. Semester-III	ZO-231: Paper – I: Animal Diversity III	<ol style="list-style-type: none"> 1. To Introduce taxonomy and animal systematics 2. Learn basic of animal Classification and role of animal taxonomy 3. Learn the basic principles of classification and nomenclature and data used in the classification 4. This course will develop interest of the students by studying various sources of data used in the systematics
	ZO-232: Paper- II: Applied Zoology	<ol style="list-style-type: none"> 1. To make the students aware of applications of Zoology subject in various industries. 2. This course deals with the study applied courses. 3. Course also gives awareness about applied zoology in people.



	ZO-233: Paper- III: Zoology Practical Paper	<ol style="list-style-type: none"> 1. This is the practical course, based on all the theory courses and gives detailed demo equipment of applied courses. 2. This course helps in understanding of the morphological characters and classification by studying animal families. 3. Students will understand the economic importance of sericulture and apiculture.
S. Y. B. Sc. Semester-IV	ZO-241: Paper - I: Animal Diversity IV	<ol style="list-style-type: none"> 1. This course will provide salient features of animal classes (Reptilia, Aves, Mammalia) 2. Student will study the model organism Collodion. 3. Students will get the knowledge of Poisonous and non-poisonous snakes. 4. After completion of this course, the students will learn how the apply is exactly
	ZO-242: Paper II: Applied Zoology II	<ol style="list-style-type: none"> 1. This course deals with study of basics of rearing the Honey Bee and Silk worm. 2. Students are expected to gain the skill to rearing of honey bee and silk worm. 3. Students will understand the economic importance of sericulture and apiculture. 4. In plant genetic engineering students are expected to learn various steps in plant genetic engineering. 5. Students are expected to learn various products and byproducts of sericulture and apiculture.
	ZO-243: Paper- IV: Zoology Practical Paper	<ol style="list-style-type: none"> 1. This is the practical course, based on all the theory courses and gives detailed demo equipment of applied courses. 2. The student will experience handling various equipment. 3. The main outcome of this course is to understand theory by direct practice in laboratory.

M.Sc. I (Zoology) (2020-21)

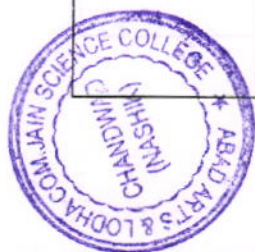
Year	Course	Course Outcomes
M.Sc. Semester-I	Paper I: Course Code and Course Name: ZOUT 111 Biochemistry and Biochemical Techniques.	<ol style="list-style-type: none"> 1. Define basic terms in biochemistry and biochemical techniques. 2. Explain the applications of the various biochemical techniques. 3. Explain the structure and functions of various biomolecules. 4. Explain the importance of tools and techniques in biology. 5. Illustrate the principle, working and applications techniques 6. Explain the importance and applications of techniques in biochemistry. 7. Explain the principle and applications of various chromatographic techniques with Examples. 8. Explain the principle, working, materials used and applications of electrophoresis.
	Paper II: ZOUT 112 Cell Biology and Developmental Biology	<ol style="list-style-type: none"> 1. Label the various cell parts. 2. Sketch and label various types of cells and cell organelles. 3. Diagrammatically represent the cell cycle phases and its regulation. 4. Explain the ultrastructure and functions of various cell organelles. 5. Define the terms in developmental biology 6. Explain the significance of model organism for developmental studies. 7. Explain the concept of mesoderm induction and pattern formation with examples. 8. Explain the types of eggs, concept of fertilization and cleavage pattern.



	<p>Course Code and Course Name: ZOUT 113 Genetics and English in Scientific Communication</p>	<ol style="list-style-type: none"> 1. Define the basic terminologies in genetics. 2. Identify genetic disorders based on Karyotypes and traits and significance. 3. Justify the inheritance of qualitative and quantitative traits. 4. Identify genetic disorders based on Karyotypes and traits. 5. Write the title, abstract, discussion and citations of a given scientific article. 6. Critically analyze data from research; incorporate it into assigned writing clearly, 7. Concisely, and logically; and attribute the source with proper citation. 8. Practice the unique qualities of professional rhetoric and writing style, such as sentence 9. Conciseness, clarity, accuracy, honesty, avoiding wordiness or ambiguity, using direct 10. Order organization, readability, coherence and transitional devices. 11. Prepare a scientific presentation using PowerPoint.
	<p>Course Code and Course Name: ZODT 114 Biostatistics</p>	<ol style="list-style-type: none"> 1. Explain the application of sampling in biological sciences. 2. Explain standard Probability distributions. 3. Explain the concept of correlation and regression with their properties. 4. Classify the given data. 5. Graphically represent the given data. 6. Illustrate the measures of dispersion with examples. 7. Solve statistical problems.
	<p>Course Code and Course Name: ZODP 114 Practical Biostatistics.</p>	<ol style="list-style-type: none"> 1. Construct frequency distribution chart. 2. Graphically represent the given data. 3. Solve the statistical problems based on Central Tendency, Dispersion, Correlation and regression. 4. Apply computer software for statistical analysis. 5. Solve numerical problems on test of hypothesis using biological data.
	<p>Course Code and Course Name: ZOUP 115 Basic Zoology Lab-1.</p>	<ol style="list-style-type: none"> 1. Identify the developmental stages of chick embryo, cell structures and phases of cell division 2. Identify the grammatical mistakes from the given paragraph and common errors in written and spoken presentations. 3. Write a scientific project and research article along with its proof reading. 4. Demonstrate the working of different microscopes, colorimetric and spectrophotometric methods, cell fractionation and ligature in <i>Drosophila</i> larvae, 5. Determine the gene distance and order, genotype and phenotype ratios and allelic Frequencies from the given data. 6. Estimate sugar and protein by suitable biochemical method, and isolate protein from biological source. 7. Prepare acid and base solutions of desired strength, buffers, bacterial Culture, chick embryo culture and <i>Drosophila</i> culture. 8. Prepare temporary slide of various cells to demonstrate the cell morphology and cell division, giant chromosome and pedigree analysis chart. 9. Calculate % retention and % elution of amino acids on given ion exchanger



M. Sc. Semester-II	ZOUT121: Molecular Biology and Bioinformatics.	<ol style="list-style-type: none"> 1. Explain the DNA structure & types, topology, Physical properties; chromatin structure and organization. 2. Discuss genome organization, DNA and Protein sequencing with their application in evolutionary studies. 3. Explain the mobile DNA elements. 4. Explain mechanism of DNA damage and repair. 5. Illustrate the process of DNA replication, transcription, translation and their regulations. 6. Illustrate the database tools with their significance. 7. Schematically represent the processes of central dogma. 8. Justify the post translational and post transcriptional modifications
	ZOUT122: Endocrinology and Parasitology.	<ol style="list-style-type: none"> 1. Discuss the roles of Pituitary gland and pineal body. 2. Explain hormonal regulation of biomolecules and mineral metabolism. 3. Describe the role of osmoregulatory and gastrointestinal hormones. 4. Explain the role of hormones in moulting, change in body colour of crustaceans; yolk synthesis in amphibians; insect development. 5. Explain the hormonal regulation of metabolism. 6. Illustrate the mechanism of hormone action and role of hormone receptors. 7. Justify hormones as coordination molecules. 8. Justify the significance of biological clocks and rhythms.
	ZOUT123: Comparative Animal Physiology & Environmental Biology.	<ol style="list-style-type: none"> 1. Explain the physiology of processes like digestion, respiration, muscle contraction and excretion. 2. Describe the mechanism of thermoregulation in both poikilotherms and homeotherms. 3. Explain the mechanism of chemical communication in vertebrates. 4. Comment on the structure and functions of various sense organs. 5. Illustrate the concept of osmotic regulation in various animals with suitable examples. 6. Compare the physiology of regulatory mechanisms in various groups of animals. 7. Justify the evolution of various life processes in living forms.
	ZODT124: Metabolic Pathways.	<ol style="list-style-type: none"> 1. Define basic terminologies of metabolic pathways. 2. Explain the laws of thermodynamics, concept of free energy and ATP as currency molecule. 3. Describe the Concepts and regulation of metabolism. 4. Discuss the oxidation of fatty acids and its significance. 5. Illustrate the electron transport chain and oxidative phosphorylation. 6. Illustrate the reactions, energetics and regulation of glycolysis, glycogen biosynthesis, TCA cycle, Purine and Pyrimidine metabolism 7. Write the general reactions of various metabolic pathways. 8. Justify the role of enzymes in metabolism
	ZODP 124: Practical in Metabolic Pathways.	<ol style="list-style-type: none"> 1. Identify the common diseases/conditions caused due to errors in metabolism. 2. Explain the principle of Colorimetry and Spectrophotometry. 3. Use the basic equipment in biochemistry lab. 4. Illustrate the enzyme activity from suitable material. 5. Demonstrate the effect of various physical and chemical factors on enzyme activity. 6. Demonstrate the absorption studies of biomolecules



	<p>ZOUP 125 Basic Zoology Lab-2 (Compulsory Course)</p>	<ol style="list-style-type: none"> 1. Identify the various parasites and parasitic stages of common parasites, nitrogenous waste products of animals, fresh water planktons and slides of endocrine glands. 2. Explain the principle and significance of gonadectomy, thyroidectomy and pancreatotomy. 3. Demonstrate the role of eye stalk and insulin in sugar level in crab. 4. Demonstrate the retro cerebral complex in cockroach. 5. Demonstrate the RBCs of common vertebrates and effect of various osmolality's. 6. Demonstrate the effect of body size, oxygen consumption and Insulin on aquatic animals. 7. Determine the bleeding and clotting time, heartbeat of crab, species richness in selected area, physico- chemical properties of soil and water. 8. Perform Sterilization of lab equipment, prepare microbial culture, Isolate Bacterial, liver DNA and RNA from given sample, quantify and resolve them using electrophoretic procedures, analyse protein sample by PAGE and SDS PAGE and construct phylogenetic tree using tools in bioinformatics.
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M.Sc. - II Zoology (2021-22)

Class	Course	Course Outcomes
M. Sc. Semester-III	ZOUT 231 Special Paper (any one) Animal Physiology-I/ Entomology- I/ Genetics-I	<ol style="list-style-type: none"> 1. Explain the membrane physiology and its dynamics. 2. Explain the concept of nutrition and digestion. 3. Explain the structure, contraction and types of contraction of muscle. 4. Illustrate bioluminescence and animal electricity with examples and its significance 5. Correlate the organisms Internal and external environments with homeostasis and biological Clocks. 6. Diagrammatically represent the mechanism of respiration, gas exchange and transport of O₂ and CO₂
	ZOUT 232 Fundamentals of Systematics and Economic Zoology	<ol style="list-style-type: none"> 1. Explain principles, methods of biological classification and diversity in kingdom Animalia. 2. Explain the importance of taxonomic keys and taxonomic characters. 3. Explain the principles of zoological classification and nomenclature 4. Signify the role of parasitic and soil protozoan in human welfare. 5. Justify the use of animals in pharmaceutical research. 6. Explain coral reef and its significance.



M. Sc. Semester-III	ZOUT 233 Research Methodology and Insect Physiology and Biochemistry	<ol style="list-style-type: none"> 1. Demonstrate knowledge of research processes (reading, evaluating, and developing) 2. Perform literature reviews using print and online databases. 3. Select and define appropriate research problem and parameters to prepare a project proposal. 4. Identify, explain, compare, and prepare the key elements of a research proposal/report. 5. Demonstrate the process of excretion, detoxification and water balance 6. Justify the role of insect hormones in physiological processes. 7. Explain the structure, Chemistry of integument and sclerotization.
	ZODT 234 Theory Immunology/ Genetic Toxicology/	<ol style="list-style-type: none"> 1. List the primary and secondary immune organs. 2. Explain the concepts of immunity, self-nonsel immune response, autoimmune disease. 3. Explain the theories of antibody synthesis and generation of antibody diversity. 4. Explain the principle and application of the common techniques used in Immunology 5. Illustrate the events and dynamics of inflammation 6. Compare the MHC molecules and diseases associated with HLA. 7. Compare the three pathways of complement fixation pathway.
	ZODP 234 Practical Zoology Practical Paper- 3 Immunology	<ol style="list-style-type: none"> 1. Identify the pattern of identity of antigen- antibody reaction. 2. Identify the microscopic structure of the lymphoid organs. 3. Demonstrate immune electrophoresis technique. 4. Demonstrate the double diffusion techniques. 5. Detect the human blood groups by antigen -antibody reactions
		Module-I: Animal Physiology-I
		<ol style="list-style-type: none"> 1. Demonstrate the effect of body size and salinity on oxygen consumption in given animal. 2. Demonstrate the effect of starvation on liver and muscle glycogen in given animal 3. Demonstrate the effect of exercise on breathing, pulse rate and blood lactate level. 4. Demonstrate the effect of pH, temperature and inhibitors on salivary amylase. 5. Map the taste buds on human tongue
	ZOUP 235 Special Lab I	Module-II: Fundamentals of Systematics and Economic Zoology
		<ol style="list-style-type: none"> 1. Identify museum specimen/pictures of minor phyla, Invertebrates, Protochordates and Vertebrates. 2. Identify animals with the help of taxonomic keys. 3. Collect and preserve animal samples using common methods. 4. Demonstrate the apiculture equipment. 5. Demonstrate the methods of prawn culture. 6. Compare various fishing tools, crafts and gears.
	Module-III: Research Methodology and Insect Physiology and Biochemistry	
	<ol style="list-style-type: none"> 1. Use MS excel in presentation and analysis of data using common statistical tests. 2. Suggest a suitable title for a research article. 3. Write the abstract, key words, result, discussion, conclusion and 	



		<p>citations of references.</p> <ol style="list-style-type: none"> Write a research project to seek funding. Demonstrate the effect of temperature on water loss in cockroach. Detect the amino acids in insect hemolymph by chromatographic method. Determine the oxygen consumption in dragon fly nymph Perform the assay of amylase activity in midgut of insect
M. Sc. Semester- IV	ZOUT 241 Special Paper-Any One- Animal Physiology- II/ Entomology- II/ Genetics-II	<ol style="list-style-type: none"> Explain the composition of blood, types of blood cells, vascular dynamics and clotting. Illustrate the anatomy and physiology of heart and cardiac cycle Describe the excretory system, nitrogenous wastes and renal regulation Illustrate the osmoregulatory mechanism in Invertebrates and Vertebrates Discuss the neuronal physiology and various potentials. Justify the location and structure of eye, ear and taste buds to their functions.
	ZOUT 242 Mammalian Reproductive Physiology and Aquaculture	<ol style="list-style-type: none"> Explain the male and female reproductive systems and sexual dimorphic characteristics Explain the sexual cycles with examples Illustrate the reproductive dysfunctions. Explain the methods of pearl culture and pearl harvesting. Illustrate the preparation and management of fish culture ponds. Demonstrate the methods of packaging and transport of fish and brood fish. Illustrate techniques of fish harvesting, preservation & processing.
	ZODT 243 Theory Histology and Histo- chemistry/ Pest Control	<ol style="list-style-type: none"> Explain the fundamental tissues in details. Describe the process of histological preparations. Illustrate the tools used in histological preparations. Justify the use of various stains and dyes used in histochemical detection of biomolecules. Justify the importance of Immunohistochemistry. Draw the structures of various tissues and label them.
	ZODP 243 Practical Zoology Practical Paper-4 (Practicals correspondin g to ZOUT 241 and ZODT 243)	<p>Animal Physiology- II</p> <ol style="list-style-type: none"> Determine the bleeding and clotting time of human blood. Demonstrate the invertebrate heart. Calculate the heartbeats of <i>Daphnia/Drosophila</i> larva. Determine serum urea and protein and glucose in human blood and urine. Justify the effects of various physical and chemical factors on frog heart and muscle. Histology and Histochemistry <ol style="list-style-type: none"> Identify the various tissues with the help of permanent slides. Demonstrate the effect of fixatives on tissues. Detect the biomolecules with histochemical staining methods. Sketch and label the microscopic details of tissues.



	ZODT 244 Theory Pollution Biology/ Apiculture	<ol style="list-style-type: none"> 1. Explain the basic concepts of apiculture like systematics, colony organization, 2. Polymorphism, morphology and foraging. 3. Explain the tools and management of apiary. 4. Explain the importance of institutions pertinent to apiculture. 5. Discuss the setup of beekeeping business.
	ZODP 244 Practical Zoology Practical Paper-5 (Practicals correspondin g to ZOUT 242 and ZODT 244)	Module- I : Mammalian Reproductive Physiology
<ol style="list-style-type: none"> 1. Identify the histological slides of reproductive organ/tissues. 2. Explain the various types of placenta in mammals. 3. Comment on merits and demerits of contraceptive devices/methods. 4. Illustrate the technique of gonadectomy. 5. Perform vaginal smear technique to identify the phases of estrous cycle. 		
Module- II: Aquaculture		
<ol style="list-style-type: none"> 1. Identify Indian oysters. 2. Identify the common freshwater fish used in culture farming. 3. Demonstrate the processing and storing methods for fish and prawn. 4. Test the freshness of fish/prawn by histological methods. 5. Test the freshness of fish/prawn by biochemical methods. 6. Prepare the culture of Daphnia and rotifers. 		
		Module- III : Apiculture
		<ol style="list-style-type: none"> 1. Identify the honey bees 2. explain the bee morphology and behaviour 3. Illustrate the bee enemies 4. Justify the rearing techniques and bee management

B.Sc. Physics (2021-22)

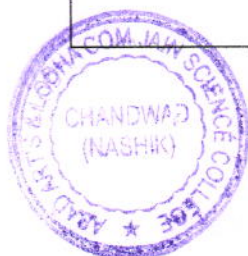
Class	Course	Course Outcomes
S. Y. B. Sc. Sem. III	(PHY 231) Mathematical Methods in Physics I (Paper-I)	<ol style="list-style-type: none"> 1. Understand the complex algebra useful in physics courses. 2. Understand the concept of partial differentiation. 3. Understand the role of partial differential equations in physics 4. Understand vector algebra useful in mathematics and physics. 5. Understand the singular points of differential equation.
	(PHY 232) Instrumentatio n (Paper-II)	<ol style="list-style-type: none"> 1. Understand the functions of different instruments. 2. Use different instruments for measurement of parameters. 3. Design experiments using sensors.
	(PHY 233) Physics lab IIA (2 Credit)	<ol style="list-style-type: none"> 1. Exposure of techniques of handling simple instruments and also certain mechanical and thermal properties of matter. 2. Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. 3. Demonstrate an ability to collect data through observation and/or experimentation and interpreting data. 4. Demonstrate an understanding of laboratory procedures including safety, and scientific methods. 5. Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.
	(PHY 241) Oscillations, Waves and Sound (Paper-I)	<ol style="list-style-type: none"> 1. Understand the physics and mathematics of oscillations. 2. Solve the equations of motion for simple harmonic, damped, and forced oscillators. 3. Describe oscillatory motion with graphs and equations, and use these descriptions to solve problems of oscillatory motion. 4. Explain oscillation in terms of energy exchange, giving various examples. 5. Explain the Doppler Effect, and predict in qualitative terms the frequency change that will occur for a stationary and a moving observer.



S. Y. B. Sc. (Sem. IV)	(PHY 242) Optics (Paper-II)	<ol style="list-style-type: none"> 1. Acquire the basic concepts of wave optics. 2. Describe how light can constructively and destructively interfere. 3. Summarize the polarization characteristics of electromagnetic waves. 4. Understand optical phenomena such as polarization, birefringence, interference and diffraction in terms of the wave model. 5. Analyze simple examples of interference and diffraction phenomena.
	(PHY 243) Physics lab IB (2 Credit)	<ol style="list-style-type: none"> 1. Exposure of techniques of handling simple instruments and also certain mechanical and thermal properties of matter. 2. Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. 3. Demonstrate an ability to collect data through observation and/or experimentation and interpreting data. 4. Demonstrate an understanding of laboratory procedures including safety, and scientific methods. 5. Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.

M.Sc. Physics

Class	Course	Course Outcome
M. Sc. II Sem. III	PHCT-231 Physics of Semi conductor Devices	<ol style="list-style-type: none"> 1. To understand basic properties of semiconductor. 2. To understand the p-n junction working in diode and understand the result from practical 3. To understand field effect devices and used as switching device. 4. To understand metals and their use in semiconductor devices.
	PHCT-232 Laser- Fundamentals and Applications	<ol style="list-style-type: none"> 1. To understand interaction of radiation with matter. 2. To understand three level and four level systems. 3. To understand working of basic LASER. 4. To understand the applications of LASER.
	PHCT-233 Experimental Techniques in Physics - I	<ol style="list-style-type: none"> 1. To understand the signal and use of signal. 2. Able to use sensors and find different applications 3. To understand meaning of vacuum and use of vacuum. 4. To understand use of different pumps for vacuum creation.
	PHOP234- K: Energy Studies-I	<ol style="list-style-type: none"> 1. To understand different energy sources and renewable sources 2. Able to find solutions on Energy crisis. 3. Use of solar radiation and use of renewable sources for power creation 4. To understand different energy storage devices.
	PHCP-235 Physics Laboratory - III	<ol style="list-style-type: none"> 1. In earlier classes and develop confidence to handle sophisticated equipment. 2. To study characteristics of solar cell, solar power photovoltaic systems and their combinations. 3. Study of solar collectors. 4. Deposition of thin films by vacuum evaporation, spin coating & dip coating.
	(PHCT-241 Nuclear Physics	<ol style="list-style-type: none"> 1. Understand the fundamental principles and concepts governing nuclear and particle physics. 2. Able to explain the Rutherford's experiment, Nuclear Radiation and Charged Particle Accelerators. 3. Able to perform practices on different nuclear detector. 4. To understand the quark model.



M. Sc. II Sem. IV	PHCT-242 Materials Science	<ol style="list-style-type: none"> 1. Various production techniques and applications. 2. Fracture analysis for different metals. 3. Strengthening mechanisms and Applications of metallic and nonmetallic materials. 4. Study of different material properties like electric, mechanical , thermal etc.
	PHCT-243 Experimental Techniques in Physics - II	<ol style="list-style-type: none"> 1. To understand radiation sources and their detectors. 2. To understand X-ray diffraction and neutron diffraction. 3. To understand optical morphology and different instruments that useful for morphological study 4. To perform spectroscopic analysis.
	PHOP244-K: Energy Studies-II	<ol style="list-style-type: none"> 1. The outcome of the course on Science of renewable Energy Sources is to expose the students to the basics of the alternative energy sources like solar energy, hydrogen energy, etc. 2. Use of hydrogen energy and bio energy.
	PHCP-245 Project	<ol style="list-style-type: none"> 1. The outcome of Major project work is to expose the students to preliminaries and methodology of research Theoretical Physics and Experimental Physics. 2. Creation of opportunity to participate in some ongoing research activity and development of a laboratory 3. Understanding of the fundamentals of basic physics.



PRINCIPAL
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