Course Outcomes

Faculty of Arts

B. A. (Economics)		
Sr. No.	**Course**	**Course Outcomes**
F. Y. B.A. (Annual)	G-1 Indian Economy – Problems and Prospects	On completion of this course students will be expected to
		CO1.To Get knowledge of indian economics devlopment.
		CO2.To Understand the indian populetion condition.
		CO3.To Comparison of the Indian Economy with other developed economy.
		CO4.Understand the Objectives, Achievements, and Failures of Five Year Plan.
S.Y.B.A.	G-2, Modern Banking	CO1.To create the awareness among the students of Modern Banking System.
		CO2.To Understand the functions of Commercial Banks.
		CO3.To Understand the Operation & Types of Accounts.
		CO4.To learn New Technology in Banking.
S.Y.B.A.	S-1, Micro Economics	CO1.To Understand the behavior of an economic agent, namely, a consumer, a producer, a factorowner and the price fluctuation in a market.
		CO2.Understand the Difference of micro or macro economics.
		CO3.To Understand the Market Structure.
		CO4.To Understand the Welfare Economics.
	S-2, Macro Economics	CO1.To Understand the Difference of micro or macro economics.
		CO2. To Learn the basic Concepts: National Income, Gross National Product, Net National Product, Per Capita Income, Disposable Income.
		CO3.To Understand the Difference macro economic Theory.
		CO4.To Understand the Inflation and Deflation.
T.Y.B.A.	G.3 Economic Development & Planning	CO1.To Understand the economic Development and Growth.
		CO2.To Comparison of the developed, Developing Countries.
		CO3.To Understand the Foreign Capital and Development.
		CO4.To Understand the Objectives, Achievements, and Failures of Five Year Plan.

T.Y.B.A.	S.3 International Economics	CO1.To Understand the theories of International Trade.
		CO2.To understand the trade policy & Exchange Rate
		CO3.To Comparison of the Fixed and flexible exchange rates.
		CO4. To understand & Comparison the Free trade & Protection policy.
	S.4 Elementary Quantitative Technique	CO1.To understand the statistical tools & techniques.
		CO2.To use of the statistical tools & techniques.
		CO3. use of data collection, presentation, analysis and drawing inferences about various statistical hypotheses.
F.Y.B.Com.	Business Economics (Micro)	CO1.To understand the micro economic concepts and inculcate an analytical approach to the subject matter.
		CO2.To understand the various economic theories.
		CO3.To understand the economic reasoning to problems of business.
S.Y.B.Com.	Business Economics (Macro)	CO1.To understand the basic concept of Macro Economics and application.
		CO2.To understand the behavior of the economy as a whole.
		CO3.To Study the relationship among broad aggregates.
		CO4.To apply economic reasoning to problems of the economy.
T.Y.B.Com.	Indian & Global Economic Development	CO1.To create students to a new approach to the study of the Indian Economy.
		CO2.To analyzing the present status of the Indian Economy.
		CO3.To understand the process of integration of the Indian Economy with other economics of the world.
		CO4.To understand the emerging issues in policies of India's foreign trade.

M. A. (Economics)		
Sr. No.	**Course**	**Course Outcomes**
M. A. - I Economics	Micro-Economic Analysis - I (PART-I SEM-I)	CO1.To understand the process market and Price mechanism.
		CO2.To understand the Consumer Theory .
		CO3.To understand the Production Theory.
		CO4. Students will be expected to Classification of Markets.
	Public Economics I (PART-I SEM-I)	CO1.This course students will be expected to understand the role of government in organized society.
		CO2.Enriching the process of economic planning and development in the students .
		CO3.To understand the indian tax system.

M. A. - I Economics	International Trade (PART-I SEM-I)	CO1.This course students will be expected to Overview of Classical and Modern Trade Theories.
		CO2.To Get knowledge of GATT, WTO and world Trade.
		CO3.Students are elegible to understand the International Banking and Eurocurrency Market.
		CO4.This course students will be expected to Comparison the between Balance of Trade and Balance of Payments.
		CO5.The students are expected to understand the International Capital Flows.
	Labour Economics (PART-I SEM-I)	CO1.This course students will be expected to understand the labour Problems.
		CO2.To refer the various labour theories.
		CO3.Students are expected to the knowledge of different types in labour.
		CO4.This course students will be expected to clasification labour Problems.
		CO5.Students are elegible to explain labour & Industrial Relations.
		CO6.Students are elegible to Evolution of various Wage Policy in India.
	Agricultural Economics (PART-I SEM-II)	CO1.The candidates are expected to understand the various Agricultural policy in india.
		CO2.To Get knowledge of Recent Issues in Indian Agriculture.
		CO3.Enriching the process of Sustainable Agriculture.
		CO4.The student applicable to agricultural knowledge in practical life.
		CO5. This course students will be expected to understand Problems of Agriculture Marketing in India.
M. A.II Economics	Macro Economics I (PART-II SEM-III)	CO1.For this course students expected to understand difference in functional relationship within the large aggregates.
		CO2. To Get knowledge IS-LM Model .
		CO3.This course students expected to understand New Classical Macroeconomics & Open Economy Issues.
		CO4.This course students will be expected to clasification monetary policy.
		CO5. This course students expected to understand various theories of Interest rates.
		CO6.Students are elegible to Evolution of various aggreget economical condition.
	Growth and Development I (PART-II SEM-III)	CO1.Students become able to explain develop and underdevelop economy.
		CO2.This course students will be expected to understand Theory of Economic Growth and Development.
		CO3.To understand the role of IMF, World Bank, FII and FDI in indian Growth and Development.
		CO4.The student explain the various definitions of economic growth and development with the study of this subject.
		CO5. Student studies the theory of economic growth and development by studying this subject.

M. A.II Economics	Modern Banking (PART-II SEM-III)	CO1.Studying this topic provides a wide variety of conceptual concepts in the student banking sector.
		CO2.Students understand the changes in banking sector.
		CO3.Students of this subject understand the changes in the banking sector and use them in their daily life.
		CO4.By studying this subject, it explores the type of bank accounts of the applicant.
		CO5.The syllabus of this topic also knows about the International Financial Markets bank.
	Research Methodology (PART-II SEM-IV)	CO1.The subject matter of this topic was interested in research in the student.
		CO2.Students become able to explain meaning and types of research.
		CO3.Students are elegible to various research techniques.
		CO4.To the Students are elegible to data analysis of various topiks.
	Demography (PART-II SEM-III)	CO1.To Get knowledge Population structure in india.
		CO2.Students are elegible to explain the demographic transition.
		CO3.This paper is to make the students aware of the importance of population in economic developmen.
		CO4.This course students will be expected to understand population distribution in India(urban-rural).
	Rural Development (PART-II SEM-IV)	CO1.This paper is to make the students aware of various approaches to rural development.
		CO2.To understand the Problems of Rural Development.
		CO3.To the explain roal of government in rural development indian.
		CO4.To the explain role of IMF, World Bank, FII and FDI in indian rural development.

B. A. English		
Sr. No.	**Course**	**Course Outcomes**
FYBA	Compulsory English	1) To familiarize students with excellent pieces of prose poetry in English so that they realize the beauty & power of English
		2) To expose them to native cultural experiences and situations in order to develop humane values and social awareness
		3) To develop overall linguistic competence and communicative competence of the students
		4) To develop grammatical competence by teaching grammar referring to real life situations.
FYBA	General English	1) To expose students to the basics of literature and language
		2) To familiarize them with different types of literature in English, the literary devices and terms so that they understand the literary merit.
		3) To introduce the basic units of language such as phoneme, word stress, so become aware of the technical aspects of language
		4) To introduce techniques of studying and analyzing literature and language

SYBA	Compulsory English	1. To develop competence among the students for self-learning
		2. To familiarize students with excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English
		3. To develop students' interest in reading literary pieces
		4. To expose them to native cultural experiences and situations in order to develop humane values and social awareness
		5. To develop overall linguistic competence and communicative skills of the students
SYBA	General English Paper II	1. To expose students to the basics of short story, one of the literary forms
		2. To familiarize them with different types of short stories in English
		3. To make them understand the literary merit, beauty and creative use of language
		4. To introduce some advanced units of language so that they become aware of the technical aspects and their practical usage
		5. To prepare students to go for detailed study and understanding of literature and language
		6. To develop integrated view about language and literature in them
SYBA	Special English Paper I	1. To acquaint the students with the terminology in Drama Criticism (i.e. the terms used in Critical Analysis and Appreciation of Drama)
		2. To encourage students to make a detailed study of a few sample masterpieces of English Drama from different parts of the world
		3. To develop interest among the students to appreciate and analyze drama independently
		4. To enhance students awareness in the aesthetics of Drama and to empower them to evaluate drama independently
SYBA	Special English Paper II	1. To familiarize the students with the terminology in poetry criticism (i.e. the terms used in critical analysis & appreciation of poems)
		2. To introduce various types of poetic forms & to encourage students fordetailed study of a few sample master pieces of English poetry
		3. To enhance students awareness in the aesthetics of poetry & to empower them to read, & critically evaluate the poetry independently
		4. To develop critical and analytical skills of the students.
TYBA	Compulsory English	1. To introduce students to the best uses of language in literature.
		2. To familiarize students with the communicative power of English
		3. To enable students to become competent users of English in real life situations
		4. To expose students to varied cultural experiences through literature
TYBA	General English Paper III	1. To expose students to some of the best samples of Indian English Poetry
		2. To make the students see how Indian English poetry expresses the ethos and culture of India
		3. To make them understand creative uses of language in Indian English Poetry
		4. To introduce students to some advanced and emerging areas of language study

TYBA	TYBA Special English Paper III	1. To introduce students to the basics of novel as a literary form
		2. To expose students to the historical development and nature of novel
		3. To make students aware of different types and aspects of novel
		4. To develop literary sensibility and sense of cultural diversity in students
		5. To expose students to some of the best examples of novel
	TYBA Special English Paper IV	1. To introduce students to the basics of literary criticism
		2. To make them aware of the nature and historical development of criticism
		3. To make them familiar with the significant critical approaches and terms
		4. To encourage students to interpret literary works in the light of the critical approaches

M. A. English		
M. A. - I	1.1 English Literature from 1550-1798	1) To introduce students to major movements and figures of English Literature through the study of selected literary texts
		2) To create literary sensibility and emotional response to the literary texts and implant sense of appreciation of literary texts
		3) To expose students to the artistic and innovative use of language employed by the writers
		4) To instill values and develop human concern in students through exposure to literary texts
	1.2 English Literature from 1798-2000	1. To introduce students to major movements and figures of English Literature through study of selected literary texts
		2. To create literary sensibility for appreciation in students and expose them to innovative use of language by writers and to various worldviews
		3. To instill values and develop human concern in students through exposure to literary texts
		4. To enhance literary and linguistic competence of students
M. A. - I	Paper 1.3 Contemporary Studies in English Language	1. To introduce students to the basic tools essential for systematic study of language
		2. To acquaint students with the basic concepts and issues in linguistics
		3. To introduce them to various sub-disciplines of linguistics
		4. To initiate them into theoretical perspectives and enable them to apply the acquired linguistic skills in real life situations
	Paper 1.4 Literary Criticism and Theory	1) To introduce students to the nature, function and relevance of literary criticism and theory
		2) To introduce them to various important critical approaches and their tenets
		3) To encourage them to deal with highly intellectual and radical content and thereby develop their logical thinking and analytical ability
		4) To develop sensibility and competence in them for practical application of critical approach to literary texts

MA Part II	Paper-3.1 Indian Writing in English (Core Paper)	1) To introduce students to major movements and figures of Indian Literature in English through the study of selected literary texts
		2) To create literary sensibility and emotional response to the literary texts and implant sense of appreciation of literary text
		3) To expose students to the artistic and innovative use of language employed by the writers
		4) To instill values and develop human concern in students through exposure to literary texts
	Language & Literature Teaching	1) To acquaint the students with theories and practices of English language and literature teaching
		2) To acquaint the students with methods, approaches and techniques of English language and literature teaching
		3) To sensitize students to the major issues in English Language and Literature Teaching in the Indian Context.
	Drama in English	1) To study major types of drama and movements related to the form of drama
		2) To develop literary sensibility for appraciation of drama and to develop skills required to effectively interpret and analyze drama
		3) To instill values and develop human concern in students through exposure to literary texts
		4) To enhance literary and linguistic competence of the students
	Research Methodology	1) To familiarize students with tools and techniques of research and to prepare them for undertaking research activity
		2) To introduce students to the basic concept of research and to enable them understand the process and stages of the research
		3) To familiarize students with research methods and processes

B. A. Geography		
Class	Course	Course Outcomes
F.Y. B.A.	Geomorphology	CO1. Get knowag to the basic concepts in Geomorphology.
		CO2. understand latest concepts in Geomorphology.
		CO3. To acquaint the students with the utility and application of Geomorphology in different regions and environment.
		CO4. This course develops analog system designing skills among the student, which develop their knowledge of analog circuits.
F.Y. B.COM	Commercial Geography	CO1.To understand the scope Commercial Geography in relation to spatial distribution of agriculture, forest resources & industrial production
		CO2.To acquaint the students about dynamic aspects of Commercial Geography
		CO3.To acquaint the students about dynamic nature of Industrial field in India
		CO4.To make the students of commerce aware about the relationship between the geographical factors and economic activities
S. Y. B.A. (Annual)	Gg 210: Geography of Disaster Management (G2)	CO1. To introduce the students to the concepts of Disaster & its relation with Geography.
		CO2. To acquaint the student's with the utility and Application of hazards in different area & its Management.
		CO3. To make the students aware of the need of protection & disaster Management.

T.Y..B.A (Annual)	Gg.: 310 Human Geography (G-3)	CO1. This course is to acquaint the students with the nature of man - environment relationship and human capability.
		CO2. To identify and understand environment and population in terms of their quality and spatial distribution pattern.
		CO3. To identify and understand environment and population in terms of their quality and spatial distribution pattern.
		CO4. To help the students to understand the recent trends in regional studies.

B.A. (History)		
Class	**Course**	**Course Outcomes**
F. Y. B.A. (Annual)	Chhatrapati Shivaji and his Times	On completion of this course students will be expected to
		CO1.To Get knowledge of Introduce innovative study techniques in the study of History of Maratha
		CO2.To highlight the importance of past in exploration of present context.
		CO3.To understand the Socio - economic, cultural and political background of 17th century Maharashtra.
S.Y.B.A. G-2	Modern India (1857-1950)	CO1.To the student to know- History of freedom movement of India, aims, objectives problems and progress of Independent India.
		CO2.To explain the basic concepts/ concerns/ frame work of Indian History.
		CO3.To It aims at enabling the student to understand the processes of rise of modern India.
		CO4.To the Course attempts to acquaint student with fundamental aspects of Modern Indian History.
S.Y.B.A. S-1	Ancient India	CO1.To the Course intends to provide an Understanding of the social, economic, religious and institutional bases of Ancient India.
		CO2. To Survey the sources of History of Ancient India.
		CO3. To study the development of the concept of Nation- State background of political history.
		CO4.To study ancient Indian Art & Architecture.
S.Y.B.A. S-2	History of Modern Maharashtra (1818 to 1960)	CO1.To introduce the student to the regional history within a broad national framework.
		CO2. To the purpose of the course is to enable the students to study the history of modern Maharashtra
		CO3.To highlight the ideas, institutions, forces and movements that contributes to the modern Maharashtra.
		CO4.To acquaint the students with various interpretative perspectives.
T.Y.B.A. G-3	History of The World In 20th Century (1914-1992)	CO1.To orient the students with political history of Modern World
		CO2.To acquaint Students about the main developments in the Contemporary World.
		CO3.To understand to important development in 20th century World.
		CO4.To Impart knowledge about world concepts.

T.Y.B.A. S-3	S.3 Introduction to History	CO1.To orient students about how history is studied, written and understood.
		CO2.To To explain methods and tools of data collection
		CO3.To understand the meaning of Evolution of Historiography.
		CO4. To understand the meaning of Evolution of Historiography
T.Y.B.A. S-4	S.4 History of Asia In 20th Century (1914 – 1992)	CO1.To orient the students with political history of Asia.
		CO2.To Understand the important developments in the 20th century Asia in a Thematic approach.
		CO3.To empower students to cope with the challenges of globalization.
M. A. (History)		
M. A. - I	History and its Theory & Practice	CO1.To the paper is designed to provide adequate conceptual base, bring better understanding of history and its forces.
		CO2.To Help interrogate existing paradigms and challenge the outdated, help in developing critique, help research in terms.
		CO3.To the paper is designed to provide adequate conceptual base, bring better understanding of history and its forces.
M. A. - I	Evolution of Ideas and Institutions in Ancient India -I & In Medieval India II	CO1.The course intends to provide an understanding of the social, economic and institutional bases of Ancient India.
		CO2. It is based on the premise that an understanding of Ancient Indian history is crucial to understand Indian history as a whole.
		CO3.To the nature of medieval Indian society, economy, state formations, & the main religious currents of the time.
		CO4.To It is seen as a continuation of the course on ancient India.
		CO5. It is also seen to be crucial to an understanding of the nature of society, and the problems of medieval India.
M. A. - I	Maratha Polity & Socio-Economic History of the Marathas	CO1. The administrative system of the Marathas in an analytical way, to acquaint the student with the nature of Maratha Polity.
		CO2.To understand basic components of the Maratha administrative structure, to enable.
		CO3. The relationship between religion, caste, customs, traditions, class in 17th & 18th century Maratha Society, to enable.
		CO4. The student to understand aspects of economic life, to trace the determinants of changes in social and economic life.
	Cultural History of Maharashtra	CO1. To introduce the student to regional history within a broad framework of Indian culture
		CO2.To enable the student to understand the internal dynamics of Marathi culture.
		CO3.Students are expected to the knowledge of different types in labour.
		CO4.This course students will be expected to clasification labour Problems.
		CO5.Students are elegible to explain labour & Industrial Relations.
		CO6.Students are elegible to Evolution of various Wage Policy in India.
	Nature of Dalit Movement in Maharashtra	CO1.The paper intends to provide an understanding of the changing position of Dalit movement
		CO2.This paper also lays emphasis on Ambedkarian Movement, which marks an evolutionary phase in Dalit emancipation.
		CO3.It takes into account Dalit literature, which provides space for understanding of Dalit consciousness and adds new dimensions in understanding ‘Dalit’.

M. A. - II	Ancient and Medieval Civilizations of the World History of Modern India (1857-1971)	CO1. The paper intends to examine Ancient & Medieval cultures with a view to understand & present them in historical perspective
		CO2. To The student to understand intellectual trends in the modern world
		CO3. The student to understand intellectual trends in the modern world
		CO4.To enable the students to study the history of 'Modern' India in an analytical perspective
		CO5. To make them aware of the multi-dimensionality of Modern Indian History;
		CO6. To highlight the ideas,institutions, forces and movements that contributed to the shaping of the Indian modernity.
	Indian History : Challenges & Perspectives & Intellectual History of the Modern West	CO1. The student to some of the issues that have been debated by historians
		CO2. To introduce some perspectives with reference to Indian
		CO3. To understanding the concepts that are used in history,both of west Europe and India;
		CO4. To acquaint the student with the intellectual activity that played an important role in shaping events mevidel age to modern time.
M. A. - II	Socio-Economic History of the Marathas	CO1. To study socio-economic history of the Marathas in an analytical way.
		CO2. To acquaint the student with the components of social structure and their functions.
		CO3.The relationship between religion, caste, customs, traditions, class in 17th and 18th century Maratha Society.
		CO4. To understand aspects of economic life, to trace the determinants of changes in social and economic life.
	Economic History of Modern India	CO1. To acquaint the student with structural and conceptual changes in Indian economy after coming of the British.
		CO2. To help them understand the process of internalisation by Indians of new economic ideas, principles and practices of the British rule
	Maharashtra in the 19th century: Structural Changes	CO1. The purpose of the course is to enable the student to study the history of modern Maharashtra from an analytical perspective.
		CO2. The dialectical relationship between continuity and change in Maharashtra;
		CO3. To highlight the ideas, institutions, forces & movements that contributed to the structural changes in Maharashtra.
	Nature of Transformation in 20th century Maharashtra	CO1. The purpose of the course is to enable the student to study the history of modern Maharashtra in an analytical perspective
		CO2.To the explain roal of government in rural development indian.
		CO3.To the explain role of IMF, World Bank, FII and FDI in indian rural development.
		CO4. Awareness of Rural infrastructural Development to the student.

बी. ए. (मराठी)		
Sr. No.	**Course**	**Course Outcomes**
F. Y. B. A. (Annual)	G-१ मराठी विनोदी कथा, आणि व्यावहारिक व उपयोजित मराठी	१) विद्यार्थाना स्थूलपणे मराठी साहित्य भाषा आणि मराठी संस्कृती यांचा परिचय झाला .
		२) साहित्यासंबंधी विशेषतः मराठी साहित्यासंबंधी रुची निर्माण झाली .
		३) विद्यार्थ्यांमध्ये वाङ्मयीन अभिरुचीचा विकास झाला .
		४) आस्वाद घेण्याची क्षमता वाढलीं .

F.Y. B.COM	G-१यशोगाथा पाठ्यपुस्तक आणि व्यावहारिक मराठी	१) या व्यवहार क्षेत्रातील मराठी भाषेचे स्थान स्पष्ट होते.
		२) विविध क्षेत्रातील मराठीचा अभ्यास करण्यासाठी प्रसारमाध्यमांचे स्वरूप व त्यातील भाषण व्यवहार याचे आकलन होते.
		३) विद्यार्थी विविध लेखन प्रकारांचा अभ्यास करून प्रत्यक्ष लेखन करतात.
		४) आस्वाद घेण्याची क्षमता निर्माण झाली.
S.Y.B.A.G-2	G- ३ आधुनिक मराठी साहित्य व उपयोजित मराठी	१) विद्यार्थाना शुद्धलेखनाची ओळख झाली .
		२) पारिभाषिक संज्ञांची ओळख झाली .
		३) चरित्र व आत्मचरित्र या साहित्यप्रकारांच्या तात्विक घटकांची ओळख झाली .
		४) आधुनिक मराठी साहित्यातील निवडक चरित्र -आत्मचरित्रात्मक वेच्यांचे आकलन ,आणि मूल्यमापन करण्याची क्षमता विकसित झाली .
T.Y.B.A.G-3	G- ३ आधुनिक मराठी साहित्य व उपयोजित मराठी	१) आधुनिक मराठी साहित्यातील विविध साहित्य प्रकारांचा विद्यार्थास परिचय होतों .
		२) साहित्याबद्दलची अभिरुची करून कलाकृतींचा विद्यार्थी आस्वाद घेतो.
		३) भाषेचे आकलन करण्याची व वापर करण्याची क्षमता विकसित झाली .
		४) निबंध व प्रवासवर्णन साहित्यप्रकारांचे तात्विक विवेचन करतो .
एम.ए. (मराठी)		
Sr. No.	**Course**	**Course Outcomes**
एम.ए. (भाग-I)	सत्र १ ले व्यावहारिक आणि उपयोजित मराठी भाग १	१) विद्यार्थांनी शुद्धलेखनाचे नियम व मुद्रित शोधन समजावून घेतले.
		२) नियतकालिक,दिवाळी अंक,स्मरणिका,जाहिरात,ई.माहिती विद्यार्थांनी समजावून घेतली .
		३) मुलाखतीचे प्रकार,स्वरूप, तंत्र व मुलाखत लेखन समजावून घेतले.
		४) विद्यार्थांनी अर्जलेखन व पत्रलेखन स्वरूप समजावून घेतले .
एम.ए. (भाग-I)	सत्र २ ले व्यावहारिक आणि उपयोजित मराठी भाग 2	१) भाषांतराची आवश्यकता व महत्व याची माहिती झाली .
		२) विविध कार्यक्रमांचे आयोजन नियोजन ,निवेदन आंनी सूत्रसंचालन याची माहिती झाली .
		३) शासन विद्यापीठे,शैक्षणिक संस्था,बँका,कंपन्यासाठी जनसंपर्क महत्व समजले .
		४) विद्यार्थांनी अंगी असलेली विविध कौशल्य व तंत्रे समजावून घेतली.
	सत्र १ ले मध्ययुगीन मराठी वाङ्मयाचा	१) महाराष्ट्र,मराठी भाषा उगम व विकास समजून घेण्यास मदत झाली.
		२) महानुभाव वाङ्मयाचे मराठी वाङ्मय परंपरेतील स्थान समजावून घेतले.
		३) संत प्रभावळीतील संत काव्याच्या वाङ्मयाचा परिचय करून घेतला.
		४) जैन,मुस्लीम,ख्रिस्ती,वाङ्मयाचे स्वरूप,प्रेरणा,कार्य,समजावून घेतले.
	सत्र २ ले मध्ययुगीन मराठी वाङ्मयाचा इतिहास - प्रारंभ ते इ. स . १६०० ते 1818	१) संत तुकाराम आणि समर्थ रामदास यांची काव्यनिर्मिती आणि समाजप्रबोधनपर कार्य समजून घेण्यास मदत झाली.
		२) पंडिती काव्य ,परंपरा,प्रेरणा,स्वरूप,कार्य,विद्यार्थांनी समजावून घेतले.
		३) प्राचीन बखरकार व बखर वाङ्मय प्रकार स्थूलपने समजून घेण्यास मदत झाली.
		४) शाहिरी वाङ्मय व्युत्पत्ती,स्वरूप,प्रेरणा आणि प्रवृत्ती समजावून घेतली.

एम.ए. (भाग-I)	सत्र १ ले भाषाविज्ञान-वर्णनात्मक	१) भाषेचे स्वरूप ,कार्य आणि भाषाभ्यासाच्या कक्षा समजावून घेण्यास मदत झाली.
		२) स्वन,स्वनीम,स्वनंतर,या संकल्पना आणि परस्परसंबंध याचा स्थूल आढावा घेतला.
		३) रूपिका,रुपिम,रुपिकांतार या संकल्पना आणि परस्परसंबंध याचा स्थूल आढावा घेतला.
		४) अर्थविन्यास संकल्पना,स्वरूप,प्रकार,यांची माहिती समजावून घेतली.
	सत्र २ ले भाषाविज्ञान-सामाजिक	१) सामाजिक भाषाविज्ञान,स्वरूप,व्याप्ती,व विशेष,समजण्यास मदत झाली.
		२) समाजातील भाषा उपयोजनातील विविधता समजावून घेतली.
		३) भाषा,सामाजिक परंपरा आणि विविध सामाजिक संस्था समजावून घेण्यास मदत झाली.
		४) प्रमाण भाषेची संकल्पना समजली .
	सत्र १ ले ग्रामीण साहित्य	१) ग्रामीण साहित्याचे महत्व विध्यार्थ्यांना समजले.
		२) ग्रामीण साहित्यातील स्वरूप व कार्य यांची चिकीत्सा समजावून घेतली.
		३) ग्रामीण साहित्यातील विविध वाङ्मय प्रकारचे मुल्येमापन समजावून घेतले.
		४) ग्रामीण साहित्याने दिलेले योगदान त्याच्या विकासाची गती व मिमासा समजावून घेतली.
	सत्र २ ले दलित साहित्य	१) दलित साहित्याच्या निर्मितीची कारणे व परंपरा विद्यार्थांना समजले.
		२) दलित साहित्यातून व्यक्त होणाऱ्या वेदना व विद्रोहाचे स्वरूप समजावून घेतले.
		३) विद्यार्थाना दलित साहित्यातील विविध वाङ्मयप्रकारांच्या विकासाचे मूल्यमापन समजून घेण्यास मदत झाली.
एम.ए. (भाग-II)	सत्र ३ ले सत्र ४ रे प्रसारमाध्यमे आणि साहित्यव्यवहार	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.
एम.ए. (भाग-II)	सत्र ३ ले सत्र ४ रे 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 पद्धतीमाघील विचारव्यूह,दृष्टी विकसित होण्यास मदत झाली.
		५) मराठी साहित्य समीक्षकांची परंपरा समजण्यास मदत झाली.
	सत्र ३ ले सत्र ४ रे विशेष लेखकाचा अभ्यास मध्ययुगीन /अर्वाचीन	१) एकाच लेखकाचे वाङ्मयीन आकलन लेखकाच्या व्यक्तिमत्त्वाची घडण,सांकृतिक व वाङ्मयनिर्मिती व त्यच्या प्रेरणा समजण्यास मदत झाली.
		२) लेखकाचा काळ व त्याची साहित्यनिर्मिती यातील संबंधाचा शोध व लेखनातून कालतत्व व चिरंतन तत्व त्यांचा मागोवा घेण्यास मदत झाली.
		३) विविध वाङ्मय कृतीतून लेखकाचे योगदान व त्याचे तौलनिक आकलन होण्यास मदत झाली.
		४) साहित्य निर्मितीमाघील लेखकाचे स्थान, जीवननिष्ठा व त्यांचे साहित्यनिर्मितीवरील परिणाम व साहित्यातील लेखकाचे योगदान याचे आकलन झाले.

एम.ए. (भाग-II)	सत्र ३ ले सत्र ४ रे लोकसाहित्याचे मुलतत्वे आणि मराठी लोकसाहित्य	१) लोकसाहित्याचे स्वरूप समजण्यास मदत झाली.
		२) लोक्साहित्याची 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. - Political Science		
Sr. No.	**Course**	**Course Outcomes**
F. Y. B. A (Annual)	G-I Indian Government And Politics	CO1. Students are able to understand the background and the salient features of Indian Constitution.
		CO2. Students explain the difference between the fundamental rights and directive principles in Indian Constitution.
		CO3. Students describe the challenges ahead of Indian Union territory.
		CO4. Students are eligible to explain the role of caste and religion in Indian political process.
S. Y. B. A (Annual)	G-II Government and Politics of U.K., U.S.A.	CO1. Students understand the journey from Britain's monarch to democracy.
		CO2. Students understand the role of the American president in global politics.
		CO3..Students compare British and American governmental methods with Indian government.
		CO4. Students search for parallel links between England and the United States Constitution.
S. Y. B. A (Annual)	S-1 Western Political Thoughts	CO1. It helps students to understand the theoretical framework of various political institutions.
		CO2. Studies of philosophers like Plato and Aristotle help students to understand the role of citizens in the ideal state.
		CO3. Students understand different theory of state creation through the study of elements like Hobbes, John locke, and Rouseas.
		CO4. Students explain the relevance of Karl Marx's ideas in today's changing social and political environment.
	S-II Political Sociology	CO1. It helps students to understand the nature and scope of political sociology.
		CO2. The students get good political socialization .
		CO3. Students explain various types of political culture.
		CO4. Students explain the difference between power and authority.
T. Y. B. A (Annual)	G-III Political Ideologies	CO1. It helps students to understand the nature and scope of political ideology.
		CO2. Students are compare between the Fascism and Democratic Socialism.
		CO3. Students are able to explain various elements of nationalism.
		CO4. It helps Students to understand the importance of Gandhism for world peace.
T. Y. B. A (Annual)	S-III Public Administration	CO1. It helps students to understand the nature and scope of Public Administratiton.
		CO2. Students explain the difference between traditional public administration and New public administration.
		CO3. Students are able to understand the role of bureaucracy in modern government.

T. Y. B. A (Annual)	S-IV International Politics	CO1. It helps students to understand the nature and scope of Intrnational Politics.
		CO2. Students are understand the various Approaches to the study of International Relation.
		CO3. It helps students to understand the importance of balance of power in global politics.
		CO4. It helps in understanding the role of diplomacy in the making of foreign policy.

M. A. - Political Science		
Sr. No.	**Course**	**Course Outcomes**
M.A.- I	Political Theory Sem-I	CO1. It helps in understanding the nature and significance of political theory.
		CO2. Students are understand the Liberal,Marxist and Feminist in Contemporary Perspectives.
		CO3. Students are able to understand the Liberal,Marxist and Feminist in Contemporary Perspectives.
		CO4. students are understand the major key concepts of political Science, like Liberty,Equality,Justice,Rights etc.
	Public Administration Sem-I	CO1. It helps students to understand the nature and scope of Private-Public Debate.
		CO2. Students explain the Evolutionary steps of public administration.
		CO3. The importance of the accoutability and control over the public administration is realized to the students.
	Political Institutions In India Sem-I	CO1. Students are aware of Unity and Integrity in the development of the nation.
		CO2. Students describe the role of central government in the federal structer of India.
		CO3. Students explain the concept of Judicial activism.
		CO4. Students understand the importance of legislative supremacy in the democratic system.
M.A.- I	Modern Political Ideologies Sem-I	CO1. There is an increase in libertarian perspective.
		CO2. It helps in enhancing awareness of nationalism among the students.
		CO3. Students can explain the difference between socialism and communism.
		CO4. Students can explain the benefits and disadvantages of fascist ideology.
	Public Policy Sem-II	CO1. It helps students to understand the nature and scope of Public Policy.
		CO2. Students are Understand the various approaches to the study of public policy.
		CO3. Students can explain the Impact of Globalization on process of Policy-making.
		CO4. Students understand the role of National Rural Health Mission (NRHM).
	Issues In World Politics Sem-II	CO1. Students are able to explain the Importance of Sovereignty in Foreign Policy Decision Making.
		CO2. Students can explain the disadvantages of international terrorism.
		CO3. Students understand the role of transnational actors (IGOs & INGOs) in the world of interdependence.

M.A.- I	Comparative Politics Sem-II	CO1. Students understand the various approaches to the study of Comparative Politics.
		CO2. Students understand the importance of constitutionalism in the administration.
		CO3. Students explain the differences between the political parties and pressure groups.
		CO4. Students are able to compare developed and undeveloped countries in political perspective.
M.A.- I	Political Process In Maharashtra Sem-II	CO1. It helps the students to understand the path of social and economic development of Maharashtra.
		CO2. Students can explain the majoe issues in political process in Maharashtra.
		CO3. Students can explain the major issues in political process in Maharashtra. (eg. cast politics,Dalits politics,Maratha Hegemony.)
		CO4. Students are comparison between the Rural local politics and Urban politics.
M.A.- II	Political Thinking In Modern India Sem-III	CO1. Students Discussing the contribution of Nehru in Modern India.
		CO2. Student are Compare the views of Dr. Ambedakar and Mahatma Gandhi on Democracy.
		CO3. To understand the Role of M.N.Roy and Neharu in Economic Transformation and Development of India.
		CO4. To increase the ability for understand the Swarajya and Sarvodaya.
	Political Sociology Sem-III	CO1. It helps students to understand the nature and scope of political sociology.
		CO2. Students explain the difference between power and authority.
		CO3. To understand the Role of Hegemony in the Politics.
		CO4. Students are able to Criticized of Marks Class Model.
M.A.- II	Theory of International Relations Sem-III	CO1. Students explain the concept of the Cold War.
		CO2. The ability to review liberalization has to be increased.
		CO3. The study of international politics creates a sense of universal brotherhood among the students.
		CO4. Students are aware of the environmental problems in new world structur.
	Indian Administration Sem-III	CO1. It helps the students to understand the key dimentions of indian administration functioning at diffrent levels.
		CO2. The students understand the importance of the Prime Minister's Office (PMO) in Central Administration.
		CO3. Students can explain the role responsibilities of governor in the administration of the states.
		CO4. It helps to understand the Civil Service Reform in the context of Liberalization.
	Traditions of Political Thought Sem-IV	CO1. Students know about the history of Political Theories from Confucius and Plato.
		CO2. To understand the Role of Thomas Aquinas in the formation of Political Theory in Medieval Era.
		CO3. Students understand the importance of Thoughts of Niccolo Machiavelli and John Locke in Early Modern Era.
		CO4. Students are able to explain the relevance of Karl Marx's ideas in contemporary world.

M.A.- II	Political Process In India Sem-IV	CO1. Students are informed about the political socialization by the election since 1951.
		CO2. To able to explain the merits and demerits of Multiparty system in India.
		CO3. Students are aware of barriers of regionalism in national integration.
		CO4. Students describe the role of caste in Indian politics.
M.A.- II	Political Participat Sem-IV	CO1. They explain the role of media in the formation of Public Opinion in modern society.
		CO2. Students are understand the Indifference to the public for politics.
		CO3. Students describe the role of political culture and political socialization.
		CO4. Students are remedies the Measures for ensuring fair participation of women in politics.
	Party System In India Sem-IV	CO1. Students are able to understand the importance of the political parties in Indian democracy.
		CO2. Students get information about national political parties and their politics.
		CO3. Students understand the unilateral era of Indian politics.
		CO4. Students get information about State Political Parties and their politics.

Faculty of Commerce

Bachelor of Commerce (B. Com.)		
Class	**Course**	**Course Outcomes**
F.Y.B.Com	Financial Accounting.	On completion of this course students will be expected to
		CO1. understand basic Surplus Capital Method and Maximum Loss Method
		CO2. understand basic principles of Net Asset and Net Payment method
		CO3. This course develops Computerozed accounting method .
	Business Mathematics and Statistics	CO1. The student will learn various types of interest ex. Simple interest, compound interest and the concept of EMI
		CO2. This course introduces to the students concept and techniques of different types of index numbers
		CO3. Learn basic calculate various types of averages and variations.
	Essentials of E-Commerce	CO1. This course leads to develop student E-Learning
		CO2. The practicals are based on appreciate the Internet technology and its utility in commercial activities,
F.Y.B.Com	Business Environment & Entrepreneurship	CO1. This course motivate the students of Entrepreneurship.
		CO2. Understand the relation between Business environment and entrepreneurship

S.Y.B.Com	Business Communication	CO1. To make aware of various communication types.
		CO2. Learn basic method of communication with merit and demerits
		CO3. This course develop the students skills of interview and effective speaking
		CO4. This course will develop the proforma of letter and application of related job
	Corporate Accounting	CO1. This course assumes the prior knowledge of basic Corporate companies accounting.
		CO2. This course realise the student Amalgamation, Absorption and External Reconstruction of companies.
		CO3. Data convertors come across analog and digital conversions and knowledge of interfacing in many electronic systems.
		CO4. This course also Knowledge of valuation of different types of shares.
	Business Management	CO1. This course leads to study of professional management.
		CO2. Student will learn to organazation structutre, team work and requirment sources.
		CO4. After completion of this course, student motivate and leadership of organazation as well as social activities.
	Elements of Company Law.	CO1. This course intoduce to student new company act and concept.
		CO2. Students are expected to gain the knowledge of different types company.
		CO3. This course learning to the student of Registration/ Incorporation of a company
		CO4. After completion of this course, student realise the duty and power of director
	Cost and Works Accounting Special Paper I	CO1. This course helps in understanding of the product raw material, labour as well as overhead introduction.
		CO2. This course is divided into two sections as direct cost and indirect cost.
		CO3. The student will experience handling of various ram material and labour accounting.
	Business Entrepreneurship Special Paper I	CO1. To Understand the internal and external aspects of business.
		CO2. Learn advanced information of entrepreneurship
		CO3. Understand the various social responsibilty of business
T.Y.B.Com	Business Regulatory Framework (Mercantile Law)	CO1. To Understand the law of law of contract and law of partnership.
		CO3. To understand the sale of goods act and consumer protection act.
		CO4. Student will develop the knowledge of which right of consumer.
		CO5. Students will be able to Interface of which type of contract sign. In future.
	Advanced Accounting.	CO1. To Understand the accounting standards and financial reporting.
		CO2. Learn the banking accounting system
		CO3. To Understand the insurance type one is a life insurance and second one is general insurance.

T.Y.B.Com	Auditing & Taxation	CO1. Student will learn which function and job condition of auditor .
		CO2. To understand the student of which amount is taxable.
		CO3. To introduce practical knowledge of e-return
	Cost and Works Accounting Special Paper II	CO1. To understand the collection and allocation of overhead.
		CO2. Student will develop the knowledge of Cost Sheet for Motor transport service and Cost Statement for Hospital and Hotel Org.
		CO3. The student will experience handling the cost accounting.
	Cost and Works Accounting Paper III	CO1. To understand the Meaning and concepts- Fixed cost, Variable costs,Contribution, Profit-volume Ratio, Break-Even Point.
		CO2. To learn types of budget .
		CO4. study some of the legal provision of audit.
	Business Entrepreneurship - II	CO1. To understand the small scale industries work in social activity
		CO2. learn the management of small scale industry.
	Business Entrepreneurship Paper III	CO1. Learn the behaviour of organazational and individual.
		CO2. Develop the team building.

Master of Commerce (M. Com.)		
Class	**Course**	**Course Outcomes**
M.COM - I	Management Accounting	CO1. To learn about difference between management accouting to other accounting method.
		CO2.To understand the student financial analysis of two year firm account.
		CO3. Student will develop the knowledge of comparative the statement of business.
	Strategic Management	CO1. know the strategic methods of business.
		CO2. Student will develop the knowledge of strategic planning.
	Advanced Accounting and Taxation I.	CO1. To learn accounting features of foreign branches and domestiv branches
		CO2. To understand the knowlwdge of valuation of shares as well as goodwill
	Adv. Accounting & Taxation Paper II.	CO1. To understand the history of income tax and what is the rules of current income tax
		CO2. To understand the knowledge of computation of taxable income
	paper - I Advanced Cost Accounting	CO1. To learn the basic meaning of labour and overhead.
		CO2. To understand the student operating costing of hospitals, educational institute etc.
M.COM - I	Costing Techniques and Responsibility Accounting	CO1. To know the types of costing standard costing, uniform costing.
		CO2. Student understanding the what is responsibility of cost accounting.

M.COM - I	Special Paper I. Production and Operations Management	CO1. This course introduces to the students product design and development
		CO2. Student realise the product quality and standardization .
		CO3. Student understand the concept of ISO 9000.
	Business Administration Special Paper II. Financial Management	CO1. Student understand the what is responsibility to Financial Manager in firm/company.
		CO2. To know the source of finance.
		CO3. Student will develop the knowledge of important in working capital in business.
	Financial Analysis & Control	CO1.Studnet knowledge of the decision of investment in long term and short term.
		CO2. This course introduces the knowledge of budget and budgetray control.
	Industrial Economics	CO1. The student will learn relation between Industrial Development and Economic developemt.
		CO2. The student understand these Meaning of Industrial Location and Theory of Location.
		CO3. To develop the knowledge of Regional Industrial imbalance - Special focus on Maharashtra
	Specialized Areas in Accounting.	CO1.. Learn special methods of accounting.
		CO2. The student will learn service sector accountig for ex.Hotel accounting
		CO3. After course compelted student practical knowledge of accounting.
	Business Tax Assess. & Planning	CO1.Student knowledge of wealth tax, service tax and GST etc.
		CO2.To know the types of tax direct and indirect tax.
	Application of Cost Accounting -III.	CO1. This course develops the role of management accountant .
		CO2.Student knowledge of the product life cycle costing.
	Advanced Cost Accounting & Cost Control	CO1. Knowledge of Process of Cost Control and Cost Reduction,
		CO2. Student clear concept of just in time (JIT) and Activity Based Costing (ABC)
	Busi. Ethics & Professional Values	CO1. To know the corporate governance, social responsibility and citizenship.
		CO2. Knowledge of Indian Approach to Business Ethics
	Special Paper IV Elements of Knowledge Management	CO1.This course Introduction to Knowledge Management Process
		CO2.Knowledge Management Tools & Change Management
		CO3. Knowledge Management Culture
M.COM - II	Business Finance	CO1. Student knowledge of the time value of money.
		CO2 .Develop the knowledge of Strategic financial planning in business
		CO3. Knowledge of the why finance important in business.

M.COM - II	Research Methodology for Business.	CO1. Formulation of the Research Problem, Development of the Research Hypotheses, Research Design& Sampling
		CO2.Knowledge of the Data Collection, Measurement & Scaling, Processing of Data
	Advanced Accounting and Taxation Paper V Advanced Auditing	CO1.The student will learn Standards on Auditing and Internal Control of business in auditing.
		CO2.Student develop the knowledge of how Audit of Limited Companies and Audit Committee and Corporate Governance
	Advanced Accounting and Taxation Paper V	CO1.Understand the which law of auditing and auditor
		CO2. knowledge of the Internal Audit process and Audit of Banks rules and regulaion.
	Advanced Cost Accounting and Cost System Special Paper V.	CO1.Student clear concepts of Efficiency Audit, Proprietary Audit, Social Audit, System audit
		CO2. Student realise how submit the Cost Audit Report.
		CO3.Numerical Problems on Cost Audit
	Management Audit	CO1.Knowledge of Procedure of Management Audit
		CO2.Develop the knowledge of Different Areas of Management Audit
	Human Resource Management	CO1.Information of what is important of manpower and planning in business.
		CO2. Knowledge of requirment process and types.
	Organizational Behaviour	CO1.Develop the knowledge of what is organizational design, culture & responsibility.
		CO2. The student will learnTheory Meaning of Emotional Intelligence Emotional Intelligence in the
	Capital Market and Financial Services	CO1.Student clear the concept of capital market and stock market.
		CO2. Develop knowledge of mutual fund and credit agencies
		CO3. Knowledge of what is the function of Securities and Exchange Board of India (SEBI)
	Industrial Economic Environment	CO1.Student learn the Internal Sources of Industrial Finance and External Sources of Industrial Finance
		CO2.Study of Export and Import
		CO3.Study of LPG,
	Recent Advances in Accounting, Taxation & Auditing - VII	CO1.A Study of Managerial Discussion And Analysis as per Section 49 of Listing agreement.
		CO2.Knowledge of Environmental Accounting, Forensic Accounting, Lean Accounting etc.
		CO3.Knowledge of Accounting for NGO Grants Accounting for Local Self Governments
	Recent Advances in Cost Auditing & Cost System VII	CO1.Basic knowledge of Excise Audit, VAT Audit And Productive Audit
		CO2.Introduction, Features and Benefits of ERP
	Special Paper VII Business Administration	CO1. Develop knowledge of Total Quality management Six sigma Technique feature & utility Five's system of Quality management.
		CO2. This course student learn Concept & Significance of turnaround management, Techniques of turnaround management.

Faculty of Science

B. Sc. - Botany		
Sr. No.	**Course**	**Course Outcomes**
F. Y. B. Sc (Semester I)	Plant Diversity	On completion of this course students will be expected to
		CO1. Study of morphology and anatomy of monocotyledonous, dicotyledonous root, stem and leaves
		CO2. Study of various parts of plants like inflorescence, Flowers, fruits, seeds, etc.
		CO3. Understanding of basic concepts related cryptogams and phanerogams
	Industrial Botany	CO1.Understanding the basic concept of industrial botany, plant resources and their applications.
		CO2. Understanding the various concepts of plant tissue culture, Agri- industries, and Mushroom cultivation
		CO3. Understanding of various techniques in floriculture, horticulture
F. Y. B. Sc (Semester II)	Morphology and anatomy	CO1. Morphology of vegetative and reproductive parts of plant.
		CO2. Importance in taxonomy.
		CO3. Brief description of different types of tissues in plants.
	Industrial Botany	CO1. Introduction to biofuel technology and industrial mycology i.e. use of economically important fungi in industries.
		CO2. Importance of bio pesticides.
		CO3. Study of plant pharmaceutical industry and fruit processing industry.
	Botany Practical	CO1. Acquire fundamental practical and manipulative skills in using laboratory equipments, tools and materials.
		CO2. Understanding of lab procedures including safety and scientific techniques.
		CO3. Study of morphology and anatomy of plants.
S. Y. B. Sc. (Semester I)	BO211: Taxonomy of angiosperms and plant community	CO1. Introduction to plant taxonomy
		CO2. learning different systems of classification.
		CO3. Sources of data for plant systematics
		CO4. learning botanical nomenclature
S. Y. B. Sc. (Semester I)	BO212: Plant physiology	CO1. Study of plant water relation, osmosis, diffusion absorption of water
		CO2. Understanding plant growth and regulators
		CO3. Study of physiology of flowering, nitrogen metabolisms.

S. Y. B. Sc (Semester II)	BO221: Plant anatomy and embryology	CO1. Introduction to plant anatomy and embryology
		CO2. Understanding of normal, anamolous secondary growth in plants
		CO3. study of microsporangium, mega sporangium and fertilization in plants
S. Y. B. Sc (Semester II)	BO222: Plant biotechnology	CO1. Study of interdisciplinary nature of biotechnology.
		CO2. Classification and application of Enzymes.
		CO3. Study of Environmental biotechnogy, plant genetic engineering
		CO4. Application of plant genetics and improvements
	BO223: Botany Practicals	CO1. Study taxonomy of angiosperms and plant community
		CO2. Demonstration experiments like imbibitions, transpiration, etc.
		CO3. Study of plant embryology, biotechnology, etc.
T. Y. B. Sc. (Semester I)	BO331: Cryptogamic Botany	CO1. Understanding the diversity of lower & higher cryptogams of algae, fungi, and bryophytes & ptridophytes.
		CO2. Understanding the Applications, economic & biological significance of Algae, Fungi,Bryophytes and Pteridophytes.
		CO3. Lichens: General characters, structure, reproduction and economic significance and their environmental impact
	BO332: Cell and Molecular Biology	CO1. Interaction of DNA, RNA, Protein and their biosynthesis.
		CO2.Understanding the fundamentals of cell organelles.
		CO3. Understanding the nature of genetic material, DNA replication, damage, gene organization, gene regulation etc.
	BO333: Genetics and Evolution	CO1. Introduction to genes, genetic variation, and heredity in living organism.
		CO2. Study of Mendelian inheritance, interactions of genes, Linkage, sex linked inheritance
		CO3. Studies different theories of evolution like natural selection.
	BO334: Spermatophyta and Paleobotany	CO1.Morphological, Anatomical characters of Gymnosperms and Angiosperms.
		CO2. study of different classification systems of Gymnosperms and Angiosperms.
		CO3. Introduction to paleobotany and study of different fossils groups.
	BO335: Horticulture and Floriculture	CO1. Study of commercial aspects of flowers and ornamental plants cultivation and management and marketing
		CO2. It provides scope to bring more unused land under flower cultivation.
	BO336: Computational Botany	CO1. Acquiring research oriented problem solving skill
		CO2. Statistical knowledge helps to use the proper methods to collect the data, employ the correct analysis & effectively interpret the result.
T. Y. B. Sc. (Semester II)	BO341 Plant Physiology and Biochemistry	CO1: Plant physiology is a discipline of botany concerned with the functioning, vital processes of plants
		CO2: Study of the fundamental processes such as photosynthesis, respiration and plant nutrition, plant hormone functions,etc.
		CO3: It is used in clinical diagnosis, manufacture of various biological products, treatment of diseases, in nutrition, agriculture, etc.

T. Y. B. Sc. (Semester II)	BO342: Plant Ecology and Biodiversity	CO1: Introduction to Plant ecology and biodiversity.
		CO2: study of environmental impact assessment and audit.
		CO3: Understand the importance of environment and relationships between the organisms
T. Y. B. Sc. (Semester II)	BO343: Plant pathology	CO1: Study of fundamentals of plant pathology.
		CO2: Scientific study of diseases in plants caused by pathogens (infectious organisms) and environment.
		CO3: Introduction to different methods for studying plant diseases.
	BO344: Medicinal and Economic botany	CO1: Introduction to pharmacognosy, Ayurvedic formulations, etc.
		CO2: Study of medicinally important drugs.
		CO3: knowledge of applied medicinal botany.
		CO4: Economic botany has interrelations with many fields including established disciplinessuch as agronomy, anthropology, etc.
	BO345: Plant biotechnology	CO1: Introduction of Plant biotechnology
		CO2: Importance of plant tissue culture.
		CO3: Study of germplasm conservation and cryopreservation.
		CO4: Study of nitrogen fixation, bioinformatics, proteomics and genomics
	BO346: Plant breeding and seed technology	CO1: Introduction, scope and importance of plant breeding and seed technology.
		CO2: Techniques, methods and practices of breeding
		CO3: study of seed certification, processing sampling, physical purity analysis
M. Sc. - Botany		
M. Sc. (Semester I)	BO1.1: Cryptogamic botany I	CO1: Understand the Applications, economical & biological importance of Bryophytes &Pteridophytes.
		CO2: Knowledge of higher cryptogams of Bryophytes & Ptridophytes.
		CO3: Study of various forms with respect to occurrence, thallus structure, reproduction & life cycle patterns.
		CO4: To study the structural, developmental and economic aspects of Pteridophytes.
	BO1.2: Biochemistry and Plant physiology	CO1: Knowledge of fundamental processes such as photosynthesis, respiration, plant physiology, etc.
		CO2: Plant physiology is a sub discipline of botany concerned with the functioning, physiology of plants.
		CO3:Knowlege of Chemical basis of life in plants and animals.
		CO4: Introduction to Nitrogen metabolism, sec. metabolism, etc.
	BO 1.3: Genetics and plant breeding	CO1: Introduction to inheritance patterns.
		CO2: Study of Allele, recombination, mutations, etc
		CO3: Study of Microbial genetics and cytogenetic

M. Sc. (Semester I)	BO1.4: Botanical techniques	CO1: Understanding of various techniques used in botany.
		CO2: Study of Chromatography, electrophoresis, etc.
M. Sc. (Semester I)	BO1.5: Practical based on BO1.1 and BO 1.4	CO1: Morphological and Anatomical study of higher cryptogams.
		CO2: Study of microtomy, cytochemical analysis, TLC, etc.
	BO1.6: Practical based on BO1.2 and BO 1.3	CO1: Estimation of chlorophyll, reducing sugars, Proteins, Proline, etc.
		CO2: Study of different cytological stages.
M. Sc. (Semester II)	BO2.1: Cryptogamic botany II	CO1: Knowledge of lower cryptogams of Algae and fungi.
		CO2: Understand the Applications, economical & biological importance of Algae and fungi.
		CO3: Lichens: General characters, structure, reproduction and economic importance.
	BO2.2: Cell biology and evolution	CO1: Knowledge of interaction of DNA, RNA, Protein and their biosynthesis
		CO2: Familiarize with cell organelles, cell signaling, cell cycle, etc.
		CO3: Idea of different theories of Evolution.
	BO2.3: Molecular biology and genetic engineering	CO1: Study of structure and properties of nucleic acids.
		CO2: brief study of DNA replication, DNA damage, protein synthesis, etc.
		CO3: Enzymes, vector used in genetic engineering
	BO2.4: Plant ecology and phytogeography	CO1: Study of interactions among organisms and their environment.
		CO2: Interdiciplinary field that straddles biology, geography
		CO3: Understand the importance of environment and relationships between the organisms.
	BO 2.5 Practical based on BO 2.1 and 2.2	CO1: Practicals based on lower cryptogams and cell biology.
		CO2: Isolation and identification of different cell organelles.
		CO3: Classification, morphological and anatomical study of lower cryptogams
	BO 2.6 Practical based on BO2.3 and 2.4	CO1: Practicals based on Molecular biology, genetic engineering, plant ecology.
		CO2: Study of electrophoresis
		CO3: physicochemical analysis of soil and water
M. Sc. (Semester III)	BO 3.1 Spermatophytic botany	CO1: knowledge of general aspects of living and fossils gymnosperms
		CO2: Systematic and classification systems of angiosperms.
		CO3: Study of phytogeography
	BO 3.2: Developmental botany and economic botany	CO1: brief study of different process of plant developments.
		CO2: introduction to physiology and molecular basis of plant development.
		CO3: Sources, method of cultivation and economic uses of plants

M. Sc. (Semester III)	BO 3.3: Industrial botany I	CO1: Introduction to Algal, bio-pesticidal, bioethnol and fermentation technology and their industrial significance.
		CO2: Environmental implication of fossil fuels
M. Sc. (Semester III)	BO 3.44: Advance seed technology	CO1: Introduction to floral biology
		CO2: knowledge regarding seed processing
		CO3: Advance knowledge of seed marketing
	BO 3.5 Practical based on BO 3.1, 3.2 and 3.3	CO1: Study of external, internal and reproductive morphology of gymnosperms.
		CO2: study of different angiospermic families of plants.
		CO3: Practicals based on development and Economic botany
	BO 3.6: Practical based on BO special paper	CO1: Practicals based on advanced Seed Technology.
		CO2: Study oif various seed instruments
M. Sc. (Semester IV)	BO 4.1: Computational botany	CO1: Computational botany allows the subject to understand more deeply.
		CO2: Accomplishment of research oriented problem solving skills.
		CO3: Statistical knowledge helps to use the proper methods to collect the data, & correct analysis & effectively interpret the result.
	BO 4.2: Plant organism interaction	CO1: Study of Plant –Plant interactions, Herbivory and Carnivorous Plants, Symbiotic Associations etc.
		CO2: Understanding of pollination and dispersal biology
	BO 4.3: Industrial botany II	CO1: 'Herbal Technology: various wild & Medicinal herbs, plants are used for Industrial Purpose
		CO2: Floriculture- Principles, Importance of floriculture in developing country.
		CO3: 'Industrial plant tissue culture'- Economic importance of Micro propagation for Banana, Lilium, Orchids & Gerbera.
	BO 4.4: Plant pathology	CO1: knowledge about Plant pathology and its objectives.
		CO2: Understanding the nature and concept of plant disease
		CO3: Study about the Penetration, infection and spread of diseases.
	BO 4.5: Practicals	CO1: Practicals based on computational botany, industrial botany and plant pathology.
		CO2: Research orientation of students
	BO 4.6: Res.Methodology and summer training	CO1: preparation of report on techno commercial case studies.
		CO2: Research orientation of students

B. Sc. - Chemistry		
Sr. No.	**Course**	**Course Outcomes**
F. Y. B. Sc (Annual)	Physical and Inorganic Chemistry	CO1. get knowledge of scientific and technological aspects of Chemistry.
		CO2. It enables students to understand basic laws regarding states of matter, surface chemistry, thermodynamics & structure of atom.
		CO3.Students are also made awarw of mole concept, derivations, depictions and problem solving techniques.
		CO4. Aware by periodic properties of the elements including the preliminary theories of bonding such as co-ordinate bond valence bond etc.
	Organic and Inorganic Chemistry	CO1. Students are made aware of fundamental concepts of organic and inorganic chemistry.
		CO2. The structure, bonding, properties, structural effects, acid-base theories, preparation methods, reactivity of organic compounds.
		CO3. Student get knowledge of Perodic table,Properties of Element.
		CO4.Student also get aware by many important reactions of organic chemistry,such as Cannizaros,Aldol condensation,etc
	Chemistry Practical Paper III	CO1.Chemistry is an experimental subject; practical course is intended to achieve the basic skills required for understanding the concepts.
		CO2. This course give practical knowledge of TLC,Melting point,and various test in the organic, inorganic and physical chemistry.
S.Y.B.Sc. Chemistry (semester Pattern)	Physical & Analytical Chemistry -CH211	CO1. Students are made aware about kinetics of chemical reactions, photochemical laws , distribution law and extraction process.
		CO2.Students introduced to analytical chemistry in which they are made aware of inorganic qualitative analysis &analysis of organic compounds
		CO3. Student also aware by Thermodynamic concept,Colligative Properties,Free energy equilibria,Distribution law.
		CO4. Student also aware by many basic concepts of physical aqnd analytical chemistry.
	CH-212- ORGANIC CHEMISTRY	CO1. This course assumes the prior knowledge of basic Organic chemistry and Inorganic chemistry.
		CO2. This course deals with Sterioisomerism,Chemistry of Ketone aldehydes,alcohol.
		CO3. This course give brif knowledge of Chemistry of Natural and Unnatural carboxylic acids , Aliphatic and Aromatic amines
		CO4. This course deals with knowledge of Chemistry of homocyclic and heterocyclic compounds,Biomolecules.
S.Y.B.Sc (Semester II)	CH-221 Physical Chemistry and Analytical chemistry	CO1. This course deals with Free Energy and Equilibrium .
		CO2. Student will learn, Free energy concepts, types and its variation
		CO3. Students will get the knowledge of Ideal and non ideal solutions and laws governing these solutions.
		CO4. At the end of this course,students must know methods of expressing concentrations, primary & secondary standard solutions.
	CH-222-Organic and Inorganic chemistry.	CO1. This course deals with study of : Reagents in Organic Synthesis
		CO2. Students are expected to gain the knowledge of Know different biomolecules.Appreciate the role of biochemistry in the day life.
		CO3. There is details of Chemistry of d-block elements and Acids, Bases and Solvents
		CO4. Student will study Toxic chemicals in the environment, Impact of toxic chemistry on enzymes.

S.Y.B.Sc (Semester II)	Practical Paper III	CO1. This is the practical course, students learn Organic Qualitative analysis.
		CO2. This course helps in understanding Inorganic qualitative analysis.
		CO3. This course is divided into two sections as analog and digital.
		CO4. The student will learn Estimation practicals by Titration method.
		CO5. Students will get knowledge and handling by synthesizing organic compounds.
T. Y. B. Sc. (Semester I)	Physiacal Chemistry	After completing the T. Y. B. Sc. In Electronic Science the student will be expected to
		CO1. To get familiar with Expression for rate constant k for third order reaction
		CO2. To Understand Ohm's law and electrical units such as coulomb, Ampere, Ohm and Volt.
		CO3. Learn Meaning and Types of equilibrium such as true or static, metastable and Unstable equilibrium.
		CO4. Understand Derivation of phase rule.
		Co5. Get knowledge of Explanation of water system Description of the curve.
	Inorganic Chemistry	CO1. To Understand Molecular Orbital Theory
		CO2. To Understand the Know the theories of covalent bond formationKnow the assumptions and limitations of VBT
		CO3. Get knowledge of General account and meaning of the terms involved in coordination chemistry.
		CO4. Student get knowldege of WERNER'S THEORY OF COORDINATION COMPOUNDS
	Organic Chemistry	CO1. Students should know Definition and types of organic acid and base
		CO2. Students should know Effect of temperature on pka/pkb.
		CO3. Student will be learn To draw different types of disubstituted cyclohexane in Chair form.
		CO4. Students should understood Definition and type of nucleophiles and leaving groups & Different types of nucleophilic substitution reactions
T. Y. B. Sc. (Semester I)	Analytical Chemistry	CO1. To learn Methods of thermo gravimetric analysis
		CO2. Relation between TGA and DTA.
		CO3. To introduce Principles of Spectrophotometric analysis & properties of electromagnetic radiations,Electrophoresis, & Turbidimetry
	Industrial Chemistry.	CO1. To understand the principles of Polymer chemistry,Classification of Polymers: Organic and Inorganic polymers .
		CO2. To learn Occurrence, Manufacturing of refine cane sugar from sugar cane
		CO3. To get theorotical knowledge of Manufacture of industrial alcohol from molasses, fruits, food grains, & ethylene.
		CO4. Toknow the Chemistry of soap, row material, chemical reaction, types of soap.
	Enviornmental Chemistry	CO1.Students should know Importance and conservation of environment.
		CO2.Students should know Segments of atmosphere,Hazards of flue gases.
		CO3.Student should know Hydrosphere and water pollution.
		CO4.Student get aware of Green Chemistry and synthetic chemistry Reduction of risk ,Hazard and exposure

T. Y. B. Sc. (Semester II)	Physiacal Chemistry	CO1. To understand the What is mean by Electrochemical cell with specific example.
		CO2. To learn Conventions used to represent electrochemical cell
		CO3. understand The atom its nucleus and outer sphere,Discovery of radioactivity, Decay kinetics.
		CO4. Get knowldege of Crystal system and their characteristics. Explain the term polymorphism /allotrophism.
	Inorganic chemistry.	CO1. Understand the knowldege of Chemistry of f- block elements.
		CO2. Learn Lanthanide contraction and effects of lanthanide contraction on post-lanthanides.
		CO3.Understand Electrical conductivity of metals (Na, Mg, Al), Valence electrons and conductivity of metals,
		CO4.Know the nature of solids,Know the crystal structures of solids.
	Organic Chemistry	CO1. To learn Carbanions and their reactions,Aldol, Claisen, Dieckmann and Perkin Reactions.
		CO2. Student will learn Retrosynthetic analysis and applications.
		CO3. learn Introduction, Mechanism of rearrangement reaction involving carbocation, nitriene and oxonium ionintermediate.
		CO4. understand Spectroscopic methods in structure determination of Organic compounds.and natural products.
	Analytical Chemistry	CO1. Difference between KD and D, Various types of techniques,like (a) extraction (b) continuous extraction (c) counter current extraction.
		CO2. know Relation between theoretical plates and column efficiency. Technique and applications of- Column Chromatography,
		CO3. understand Separation mechanism involved in GSC and GLC, Instrumentation- stationary phases, column types, detectors
		CO4. study Need of liquid chromatography,Separation mechanism involved in adsorption and partition HPLC.

T. Y. B. Sc. (Semester II)	Industrial Chemistry.	CO1. To learn Modern Approach to Chemical Industry.
		CO2. To promote General introduction & scope of agrochemicals, Insecticides,Herbicides, Fungicides, Rodenticides, Plant growth regulators.
		CO3. To understand Bosch process, its uses., Physicochemical principles involved.
		CO4. To use Petrochemicals and eco-friendly fuels, Food and Starch Industry
	Enviornmental Chemistry.	CO1. To understand the Need of green chemistry technology
		CO2. To learn Principles of green chemistry
		CO3. To understand the Advantages of green chemistry.
		CO4. To understand the Simple examples to clarify the principles.
Annual	Practical Course- Physical chemistry.	CO1. To study the effect of Chemical Kinetics.
		CO2.To determine the molecular weight of a high polymer by using solutions of different concentrations.
		CO3. To investigate the adsorption of oxalic acid /acetic acid by activated charcoal and test the validity of Freundlich / Langmuir isotherm
		CO4. To learn the Determination of λmax and concentration of unknown solution.
	Practical Course-Inorganic Chemistry	CO1. To learn Gravimetric estimations
		CO2. To learn Volumetric Estimations
		CO3. To get familiar with Inorganic preparations.
		CO4. To learn Colorimetric Estimations.
		CO5. To use Flame Photometry.
	Practical Course- Organic Chemistry.	CO1. Student will learn Separation of Binary Mixtures and Qualitative Analysis.
		CO2. To learn Organic Estimations.

M. Sc. - Analytical Chemistry		
M.Sc I (Semester I)	CHA-190 laboratory safety and security	On completion of this course students will be expected to know
		CO1. Get knowledge of laboratory safety and security .
		CO2. This course enables students to understand basic of laboratory safety such as responsbility of csso, supervisior and students and workers.
		CO3.Students are also made awarw of inventory of laboratory chemicals.
		CO4. Students also aware by sop and rules and regulation of good laboratory practices
M.Sc I (Semester II)	CHA-290 concept in analytical chemistry	CO1. Students are made aware of fundamental concepts of organic analytical chemistry.
		CO2.Student also aware the errors in analysis and how to minimise it.
		CO3. Student get knowledge of statistical test use in analytical chemistry.

Annual	Practical Course- I	CO1.Chemistry is an experimental subject; practical course is intended to achieve the basic skills required for understanding the concepts.
		CO2. This course give practical knowledge of instrument used in laboratory as conductometer, potentiometer, colorimeter ,ph meter etc.
	Practical Course- II	CO1. This course give practical knowledge of inorganic chemistry
	Practical Course- III	CO1. This course give practical knowledge of organic chemistry
M.Sc II (Semester I)	CHA-390: Electrochemical and Radio Analytical Methods of Analysis	CO1.This course deals with study of electroanalytical technique .
		CO2. Student will learn, Coulometry,Voltammetry and polarographic methods of analysis.
		CO3. Students will get the knowledge of Radioanalytical Methods of Analysis.
		CO4. After completion of this course,students must know the analytical method methods and their use.
	CHA-391: Pharmaceutical Analysis:	CO1. This course deals with study of : Pharmaceutical Analysis
		CO2. Students are expected to gain the knowledge of Biological Tests & Assay,Physical Test, Determinations, Limit tests and Sterilization
		CO3. There is details of Analysis of vegetable Drugs,Role of FDA in Pharmaceutical Industries.
		CO4. Student will study Pharmaceutical concept actually use in pharmaceutical laboratory .
	CHA-392: Advances in Analytical Techniques	CO1.This course deals with study of Advances in Analytical Techniques and Atomic spectroscopic analysis .
		CO2. Students are expected to gain the knowledge of Classical approach for aqueous extraction,Solid Phase extraction
		CO3. There is details of Atomic Spectroscopy,Atomic Mass Spectroscopy,Atomic Fluorescence, Resonant Ionization, Enhanced Ionization
	CHA-380: Analytical Method Development & Validation &: Geochemical & alloy Analysis	CO1.This course deals with study of Analytical Method Development & Validation,Geochemical & alloy Analysis .
		CO2. Student will learn, Assay Validation and Inter Laboratory Transfer,Specific methods and Applications: Dissolution Studies
		CO3. There is details of Analysis of Geological materials,Analysis of Alloys,Analysis of Soil.
M.Sc II (Semester II)	CHA-481 Analytical Toxicology and Forensic Science	CO1.This course deals with study of Analytical Toxicology and Food Analysis .
		CO2. Student will learn, diagnosis of acute poisoning, Tratment of acute poisoning, The role of the clinical toxicology laboratory .
		CO3. There is details of Isolation, identification and determination of following 1) Narcotics- heroin and cocaine. 2) Stimulants- caffeine.
		CO4. Students will get the knowledge of Analysis of Lipids ,proteins and carbohydrates .
	CHA-490: Analytical Spectroscopy	CO1. To Understand use of spectroscopy in analytical chemistry
		CO2. To Understand the Electron spectroscopy,X- ray Methods of Analysis,Chemiluminescences and Fluorescence and phosphorescence
		CO3. Get knowledge of Nuclear magnetic resonance spectroscopy.
	CHA-491: Analytical methods for Analysis of fertilizers, detergents, Water & Polymer, Paint	CO1. Students should know Analysis of Fertilizers,Analysis of soaps and detergents,Analysis and testing of polymers
		CO2. Students should know Water pollution and analysis of polluted water
		CO3. Student will be learn polymer ,classification of polymer and their properties.
		CO4. Students should understood different properties of polymer.

M.Sc II (Semester II)	CHA-492 : Method of Analysis & Applications Pollution Monitoring & Control II	CO1. Student should know,Collection of Specimens.
		CO2. To learn Methods of Analysis of Blood and urine.
		CO3. Determination of vitamins in body fluid.
		CO4. To introduce Principles of Immunoanalytical Techniques.
Annual	Practical Course- I	CO1. This course give practical knowledge of inorganic chemistry
		CO2.Student should learn Analysis of materials such as ore alloy and soil.
		CO3. Student get knowledge of Determination of COD,sulphate and chloride from waste water .
	Practical Course- II	CO1. This course give practical knowledge of physical chemistry.
		CO2. Student should understand the use of instrument such as conductometer, potentiometer , spectrophotometer etc.
		CO3. Student should understand the use of instrument such as flame photometer ,turbiditymeter ,polarimeter etc.
	Practical Course- III	CO1. This course give practical knowledge of organic chemistry
		CO2. Student should learn Analysis Pharmaceutical, food and Bio analytical Samples .
		CO3. Student should understand the microlevel work perform in pharmaceutical industry.

M. Sc. - Organic Chemistry		
M.Sc I (Semester - I)	CHO -110 Fundamentals of Physical Chemistry	On completion of this course students will be expected to know
		CO1. Get knowledge of Recapitulation:- Heat, work & Conservation of energy.
		CO2. This course enables students to understand basic of The basic concepts, the first law,Heat:- heat capacity, enthalpy. State functions & differentials – State functions
		CO3.Students get knowledge of The second law of Thermodynamics
		CO4. Students also awareCombining First & Second law – One way of developing the fundamental equations properties of Gibbs function.
	CHO -130 Molecular Symmetry & Chemistry of p-block elements	CO1. Students get knowledge of Defining properties of a group, group
		CO2.Student also aware the Molecular Symmetry and Symmetry Groups: Symmetry elements and operations
		CO3. Student get knowledgeRepresentations of Groups: Matrix representation and matrix notation for geometric transformation,
		CO4.Student also get knowledge of Symmetry Adapted Linear Combinations: Projection operators and their use of construct SALC (Construction of SALC for sigma bonding for molecules belonging point groups: D2h, D3h D4h, C4v, Td, Oh, normalization of SALC.
	CHO -150 Basic organic chemistry	CO1. Get knowledge of Chemical bonding and basis of reactivity- Chemical bond, delocalization, conjugation, resonance, hyperconjugation.
		CO2. Acidity and basicity: various structural effects, hard and soft acid and base concept.
		CO3. Sterochemical principles, enantiomeric relationship, distereomeric relationship, R and S, E and Z nomenclature in C, N, S, P containing.
		CO4. stereospecific and stereoselective reactions, optical activity in biphenyls, spiranes, allenes. Conformational

M.Sc I (Semester II)	CHA - 210 Fundamentals of Physical Chemistry	CO1.student get knowledge of Recapitulation:-Width and intensity of spectral transitions
		CO2. Student will learn, Infra red spectroscopy : Harmonic and an harmonic oscillator, vibrational spectra of di – and poly- atomic molecules
		CO3.Get the knowledge of Raman Spectroscopy, Rotational Raman- spectra, Vibrational Raman ,Spectra, polarization of light etc.
		CO4. Students will get the knowledge of Principles of NMR – Chemical applications of PMR in structure elucidation.
	CHO - 230 Co-ordination and Bio-inorganic Chemistry	CO1. student get knowledge of Concept & Scope of Ligand Fields, Free ion Configuration.
		CO2. student get knowledge of Electronic spectra of Transition Metal Complexes.
		CO3. Student will aware Origin magnetism, types of magnetism, Curie law, Curie-Weiss Law.
	CHO - 250 Synthetic organic chemistry and spectroscopy	CO1.This course deals with study of Oxidation reactions CrO3, PDC, PCC, KMnO4
		CO2. student get knowledge of Concept of MnO2, Swern, SeO2, Pb(OAc)4, Pd-C, OsO4, m-CPBA, O3
		CO3. This course deals with study of MPV reduction and reduction with H2/Pd-C, Willkinsons catalyst, DIBAL and Wolff Kishner reduction
Annual	Practical Course- I	CO1.Chemistry is an experimental subject; practical course is intended to achieve the basic skills required for understanding the concepts.
		CO2. This course give practical knowledge of instrument used in laboratory i.e. conductometer, potentiometer, colorimeter ,ph meter etc.
	Practical Course- II	CO1. This course give practical knowledge of inorganic chemistry
	Practical Course- III	CO1. This course give practical knowledge of organic chemistry
M.Sc II (Semester I)	CHO - 350 Organic Reaction Mechanism	CO1. student get knowledge of Carbanions-Formation, stability and related name reactions
		CO2. student get knowledge of Enamines –formation and applications
		CO3 . student get knowledge of NGP :Neighbouring group participation
	CHO - 351 Spectroscopic Methods in Structure Determination	CO1. student get knowledge of 1H NMR Spectroscopy
		CO2. To Understand the Know 13C NMR spectroscopy FT NMR, Types of 13C NMR Spectra: un-decoupled, Proton decoupled, etc.
		CO3. 2D NMR Techniques General idea about two dimensional NMR spectro.Correlation spectroscopy(COSY)HomoCOSY(1H-1H),
		CO4. Mass Spectr.Instrumentation, various methods of ionization (field ionization, field desorption, SIMS,FAB, MALDI, Californium plasma.
	CHO- 352 Organic Stereochemistry	CO1. Student should know, Stereochemistry of six membered rings
		CO2.Stereochemistry of rings other than six membered
		CO3. Fused Bridged and caged rings
		CO4. Geometrical Isomerism and Stereochemistry of olefins
M.Sc II (Semester I)	.CHO - 353 Photochemistry, Pericyclic Reactions and Heterocyclic chemistry	CO1. Student should know, General basic principles, photochemistry of carbonyl compounds, alkenes
		CO2. student get knowledge of polyenes and aromatic compounds
		CO3. student get knowledge of Pericyclic reactions Electrocyclic, cycloaddition, sigmatropic and ene reactions
		CO4. Heterocyclic Chemistry. Five and six membered heterocycles with one and two hetero atoms:Synthesis, reactivity, aromatic character and importance of following heterocyclicrings: Furan, Pyrrole, Thiophene, Imidazole, Pyridine, Pyrimidine

M.Sc II (Semester II)	CHO- 450 Chemistry of Natural Products	CO1.Structure and stereochemistry of Hardwickiic acid, Camptothecin.
		CO2. To learn Taxol ,Estrone and Mifepristone
		CO3. Biogenesis – The building blocks and construction mechanism
		CO4. Get knowldege of Terpenoids – Mono, Sesqui, Di and Triterpenoids and cholesterol.
	CHO - 451 Advanced Synthetic Organic Chemistry	CO1. Get knowldege of Get knowldege of Transition metal complexes in organic synthesis ; only Pd, Ni, Co, Fe.
		CO2. Suzuki, Heck, Sonogashira, Stille, Fukuyama, Kumada,Hiyama,Negishi,Buchwald-Hartwig, Noyori, Reppe, Oxo process
		CO3. student get knowledge of C=C formation reactions: Wittig, Horner-Wordworth-Emmons
		CO4.Know the Multi-component reactions: Ugi, Passerini, Biginelli and Mannich reactions
	CHO- 452 Carbohydrate and Chiron approach, Chiral Drugs and Medicinal Chemistry	CO1. To learn Carbohydrates ,Introduction of sugars, structures of triose, tetrose, pentose, hexose.
		CO2. learn reactions of Glucose, conformation and anomeric effects in hexoses.
		CO3. Chiron approach a) Introductionb) The concept of chiral templates and chirons wherein the carbon skeleton is the chiral precursor.
		CO4. Chiral Drugs a) Student learn Introduction of chiral drugs, Eutomer, Distomer and eudesmic ratio,b) Distomers-a) with no side effects.
	CHO - 453 Designing Organic Synthesis and Asymmetric Synthesis	CO1.Student learn Designing of organic synthesis: Protection and de-protection of hydroxyl, amino.
		CO2. Student Get knowldege of carboxyl,ketone and aldehyde functions as illustrated in the synthesis of polypeptide and
		CO3. Student learn understand the Principles and applications of asymmetric synthesis: stereoselectivity in cyclic compounds,enantioselectivity
		CO4. Study of stereoselective aldol reactions. Cram's rule,Felkin Anh rule, Cram's chelate model, Asymmetric synthesis, use of chiral auxiliaries
Annual	Practical Course- I -CHO-347: (A) Single stage preparations	CO1.Student learn synthesis of 2-Phenyl indole (Fischer indole synthesis ,
		CO2. Student learn Synthesis of Benzyl alcohol and benzoic acid from benzaldehyde (Cannizzaro reaction)
		CO3. Student learn ynthesis of Benzilic acid from benzoin (Benzilic acid rearrangement)
		CO4. Student learn synthesis of 7-Hydroxy-4-methyl coumarin (Pechmann Reaction)
	Practical Course- II CHO-447 : Two stage preparations	CO1.Student learn Synthesis of Benzaldehyde - Benzalacetophenone - Epoxide
		CO2. Student learn 4-Nitro toluene ® 4-Nitro benzoic acid ® 4-Amino benzoic acid
		CO3.Student learn Resorcinol - 4-methyl-7-hydroxy coumarin - 4-Methyl-7-acetoxy coumarin
		CO4. Student learn synthesis of Cyclohexanone -Phenyl hydrazone - 1,2,3,4-Tetrahydrocarbazole
Annual	Practical Course- III CHO-448: Green Chemistry experiments	CO1.Student learn Preparation of acetanilide from aniline and acetic acid using Zn dust.
		CO2. Student learn Base catalyzed aldol condensation using LiOH.H2O as a Catalyst.
		CO3. Student learn Bromination of trans-stilbene using sodium bromide and sodium bromate.
		CO4. Student learn [4+2] cycloaddition reaction in aqueous medium at room temperature.

B.Sc. (Electronics)		
Sr.No.	**Course**	**Course Outcomes**
F. Y. B. Sc (Annual)	Analog Circuit Design Paper I	CO1. get knowledge of various analog circuits
		CO2. understand basic designing aspects for analog electronic system
		CO3. understand basic principles of amplifiers and oscillators are introduced, which gives idea about their applications
		CO4. It develops analog system designing skills among the student, which develop their knowledge of analog circuits in different applications.
	Principles of Digital Electronics Paper II	CO1. This course is designed to make students familiar with concepts of digital electronics.
		CO2. The student will learn various number systems is very important in accordance of there practical applications in the field of digital system.
		CO3. This course introduces to the students with basic logic gates, Boolean algebra and K- Maps along with their applications.
		CO4. The arithmetic circuits, & sequential circuits will make students sound in designing of digital system for various applications.
	Practical Paper III	CO1. Building of different electronic circuits for specific applications is the main aspect of this course.
		CO2. The practicals are based on theoretical concepts; it will help students to understand principles of the designed systems.
S. Y. B. Sc. (Sem. I)	Analog Circuit Design Paper I	CO1. To make aware of various analog circuits.
		CO2. Learn basic designing aspects for analog electronic system
		CO3. Learn the basic principles of amplifiers and oscillators to get idea about their applications.
		CO4. Will develop analog system designing skills among student, it leads to develop their knowledge of analog circuits in different applications.
	Digital Circuit Design Paper II	CO1. This course assumes the prior knowledge of basic digital electronics and explains various topics in digital circuit design.
		CO2. This course deals with the design aspects of various combinational and sequential circuits.
		CO3. Data convertors come across analog and digital conversions and knowledge of interfacing in many electronic systems.
		CO4. This course also gives theoretical designing using k-map for simplification of various electronic circuits in mathematical way.
S. Y. B. Sc. (Sem.II)	Electronic Instrumentation Paper-I	CO1. This course leads to study block diagrams of different electronic instrumentation like DMM,
		CRO, signal and function generators.
		CO2. Student will learn working principles of popular instruments.
		CO3. Students will get the knowledge of specifications of various instruments in the technical way.
		CO4. After completion of this course, the students will learn the operating procedure of instruments.
	Communication Electronic Paper-II	CO1. This course deals with study of basics of communication systems and telephone
		CO2. Students are expected to gain the knowledge of different types of Modulation and Demodulation tech.
		CO3. FM modulation related concepts and FM receiver is detailed in this course
		CO4. Digital modulation techniques and digital communication as a whole is expected to learnby student.
		CO5. Through this course, students comes in familiar with advance technologies like PSTN, dish antenna , internet,video conferencing etc

S. Y. B. Sc. (Sem.II)	Practical Paper III	CO1. This is the practical course, where the actual basic principles are implemented nd some laws and theorems are verified in a systematically
		CO2. This course helps in understanding of the electronic fundamentals and it helps in building student interest as well.
		CO3. This course is divided into two sections as analog and digital.
		CO4. The student will experience handling of various components and Instruments in the Lab
		CO5. The main outcome of this course is to design the electronic circuit using particular components.
T. Y. B. Sc. (Sem. I)	Advance Didgital System	CO1. To get familiar with digital system concept and designing steps/methods
		CO2. To Understand and design sequential digital circuits with various aspects
		CO3. Learn advanced methods for digital system design
		CO4. Understand designing using VHDL in digital systems
	Microcontrollers (Paper II)	CO1. To Understand the difference between microprocessor and microcontrollers
		CO2. To Understand the architecture of 8 bit microcontroller
		CO3. Use the instruction set and addressing modes of microcontroller
		CO4. Student will develop assembly language programming skills
	Analog System Design and Applications of Linear IC's	CO1. To Understand analog system design concepts
		CO2. Learn the specifications and selection criterion for linear ICs
		CO3. Design analog electronic circuit for given specifications.
		CO4. Obtain information about different special purpose ICs and their applications
T. Y. B. Sc. (Sem. I)	Principles of Semiconductor Devices (Paper IV)	CO1. To introduce crystal structure with reference to semiconductors
		CO2. To learn the theory of metal-semiconductor and p-n junctions
		CO3. To understand the characteristics of semiconductor devices
		CO4. To introduce theoretical background of BJT and FETs
	' C '- Programming (Paper V)	CO1. To understand fundamentals of C language
		CO2. develop algorithm/flowcharts for problem solving and writing programs
		CO3. learn to use functions, arrays, pointers and file handling in C language
		CO4. learn Graphics in C.
	A) Fiber Optic Communication (Paper VI)	CO1. To understand the principles of fiber optic communication system.
		CO2. To learn measure different parameter of optical fibers.
		CO3. To understand essential optical components of Fiber Optic Communication.
		CO4. Toknow the applications of fiber optic communication systems.
T. Y. B. Sc. (Sem. II)	Advanced Communication Systems (Paper I)	CO1. To understand the parameters of Antenna
		CO2. learn modulation and demodulation techniques
		CO3. understand working of Transmitters and Receivers.
		CO4. get familiarize with Digital Communication

T. Y. B. Sc. (Sem. II)	Microcontroller and its Applications (Paper II)	CO1. Use C language for programming the microcontrollers
		CO2. Learn to use Timers and Serial Communications systems
		CO3. Develop a target board for an 8051 based embedded system
		CO4. Apply the knowledge in real world applications and learn different case studies
	Power Electronics (Paper III)	CO1. To learn about Power Electronic Devices and their characteristics
		CO2. learn simple Power circuits and their performance parameters
		CO3. learn different control techniques and applications of Power Circuits as case studies
		CO4. understand Safety Measures, Protections and Measurements.
	Foundation of Nanoelectronics (Paper IV)	CO1. know methods of quantum mechanics for nanoelectronics
		CO2. know statistical mechanics to be used in nanotechnology
		CO3. understand basics of electromagnetic and its application s
		CO4. study some of the applications in nanoelectronics
T. Y. B. Sc. (Sem. II)	Mathematical Methods and Analysis using MATLAB	CO1. To learn features of MATLAB as a programming tool.
		CO2. To promote new teaching model that will help to develop programming skills and technique to solve mathematical problems.
		CO3. To understand Laplace Transform and Fourier series and its applications.
		CO4. To use MATLAB as a simulation tool.
	A) Industrial Automation (Paper VI)	CO1. To understand the generalized configuration and performance of instrumentation system
		CO2. To learn the data acquisition systems
		CO3. To understand the process automatoin and process characteristics
		CO4. To understand the discontinuous and continuous controller modes
Annual	Practical Course- I	CO1. To refer the various datasheets of the electronic devices and integrated circuits
		CO2. To learn how to select the devices, sensors, actuators and ICs for a particular application
		CO3. To develop the basic skills required to handle the various instruments
		CO4. To learn the designing aspects of circuits/ systems
	Practical Course- II	CO1. To learn the basic C-Programming
		CO2. To learn Verilog HDL to design basic combinational and sequential circuits
		CO3. To get familiar with structural, data flow and behavioral modeling
		CO4. To learn assembly level language of 8051 microcontroller
		CO5. Toknow the various interfacing circuits to 8051 microcontroller

Annual	Practical Course- III	CO1. Student will learn the planning of the project work carrying 100 marks which is equivalent to one practical course
		CO2. The design aspects, theoretical aspects, aim and objectives are specified by the student
		CO3. student will independently carry out observations, interpretations, conclusions and ressult of project work.
		CO4. The project is reccomended to present in competitions organized by various authorities if the work us unique.

B. Sc. - Mathematics		
Subjects	**Course**	**Course Outcomes**
F. Y. B. Sc. (Annual)	MT 101 Algebra and Geometry	On completion of this course students will be expected to
		CO1: know basic facts about algebra and various forms of mathematical induction and the skill of applying a particular kind of induction for a problem
		CO2: learn fundamentals of basic number theory specifically division in integers and related concepts, study of primes and few celebrated results
		CO3: Understand the concepts of equivalence relation, congruence relations and how it is used to solve examples of other areas of mathematics e.g. group theory and ring theory
		CO4: be skilled in the studies of polynoials, algebra of polynomials and get the glimpse of algebraic theory of finding roots of polynomials over a field
		CO5: learn matrix algebra and system of linear equations, methods of finding inverse of matrix using row echlon and reduced row echlon form, eigen values, eigen vectors and finally Caley Hamilton theorem and its uses
	MT 102 Calculus and Differential Equations	On completion of this course students will be expected to
		CO1: understand the algebraic and ordered properties of set of real numbers,also the completeness properties of R and why the sets of rationals is dense in R
		CO2: understand the concepts of functions of one variable, graph of functions, limits and continuity of functions of one variable, evaluating limit of functions, differentiating functions using proper technique both graphically and by computation
		CO3: learn the three mean value theorems and their applications, methods of evaluating higher order derivatives, Leibnitztheorem and applications, Taylor's series
		CO4: be familiar with the functions of more than one varibale and their partial derivatives, solve differential equations of various kinds e.g. D.E. of first order first degree, homogeneous and nonhomogeneous differential equations, exact differential equation, Bernoulli's differential equations and nth order differential equations using appropriate methods moreover they should be able to find orthogonal tragectories and leran to apply differential equations to electronics and phyiscs

S. Y. B. Sc (Semester I)	MT 211 Multivariable Calculus I	CO1: 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
		CO2: 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.
		CO3: locate extreme values of functions of several variables using different tests
		CO4: 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 (Semester I)	Logical Equivalences, Permutation & Combination	CO1: 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 mathmatical statements are equivalent or not
		CO2: 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
		CO3: learn various methods of proofs, find counter example to prove that a propsed mathematical sentence is false, write clear and precise proofs
		CO4: solve various counting problems, distribution problems using sum rule, multiplication rule, division rule, permutation and combinition with or without repetition
		CO4: understand the inclusion and exclusion principles and its applications
	MT 212(B):Laplace Transforms and Fourier Series	On completion of this course students will be expected to
		CO1: find laplace transforms of elementary functions, understand and prove the properties of laplace transforms, find the Laplace transform of derivatives and integrals
		CO2: use Laplace transforms to determine general or complete solutions to ordinary differential equations with ostant coefficients.
		CO3: determine Laplace transforms and inverse Laplace transforms of various functions
		CO4: understand and prove certain properties of the gamma function, unit step function Dirac Delta function, and its applications
		CO5: apply the convolution theorem to obtain inverse Laplace transforms, know that any periodic function can be expressed as a Fourier series, learn how to derive a Fourier series of a given periodic function by evaluating Fourier coefficients.
T. Y. B. Sc (Semester III)	MT 331: Metric Spaces	CO1: understand several metrics on a given set, be able to decide whether the given function is metric on a given set, bounded metrics, open and closed spheres with respect to different metrics on the same metric space, detremine if the given set is open, closed, bounded, totally bounded.
		CO2: explain the notions of sequence, convergence of a sequence, Cauchy sequence with the gemoetrical meaning of point of convergence in terms of behaviour of points near it, learn the complete metric spaces, dense sets
		CO3: determine the continuity of function from one metric space to another in terms of open spheres (and hence closed spheres) at a given point, sequences and other characteriations of continuity of a function, identify the homeomorphic metric spaces using different techniques
		CO4: be able to explain the concept of compact metric spaces and its characterizations, equivalence between compactness, sequential compactness and finite intersection property, properties of continuous function on a compcat set
		CO5: understand connectedness, functions on connected sets, be able to prove mean value theorem, extreme value theorem and be aware of its geometrical aspects on completion of this course students will be expected to

T. Y. B. Sc (Semester III)	MT 332: Real Analysis -I	CO1: describe fundamental properties of real numbers, least upper bounds, the triangle inequality, functions between sets; equivalent sets; finite, countable and uncountable sets, Canor set, find least upper bound and greatest lower bound of a set if exists
		CO2: define the sequence of real numbers with proper notations, recognize convergent, divergent, bounded, Cauchy and monotone sequences, find the limit superior, limit inferior, and the limit of a sequence, recognize alternating, convergent, conditionally and absolutely convergent series using the ratio, root, limit and limit comparison tests
T. Y. B. Sc (Semester III)	MT 334: Group Theory	CO1: have understood in depth about the algebraic structure of groups, be able to decide which subsets of a given group are subgroups, find order of elements in finite groups and hence find generator of a group, be able to classify finite abelian and cyclic groups upto isomorphism and determine whether given two groups are isomorphic
		CO2: explain cosets, normal groups, factor groups, and be able to state and prove fundamental theorms of isomorphisms and its applications
		CO3: express a given finite cyclic group as the direct product of cyclic groups of prime power order and, given two direct products of cyclic groups, determine whether or not they are isomorphic
		CO4: describe group of permutations, symmetris of regular n-gon and hence dihedral groups, state and prove Caley's theorem, solve problems that involves Lagrange's theorem and find a relation between group theory and number theory while proving Euler's theorem, Fermat's theorem and solve number theory problems using algebra of groups.
	MT 335: Ordinary Differential Equations	CO1: explain the concept of differential equations, classify the differential equations according their order, degree and linearity, explain the meaning of general solution and particular solution of differential equation and its geometrical interpretation, slove homogeneous linear differential equations with constant coefficients based on the solutions of auxiliary equations
		CO2: detremine the solution of nonhomogeneous differential equations using method of undetermined coefficients, method of variation of parameters, method of reduction of order, use of a known solution to find another.
		CO3: learn how to solve differential equations with variable cofficients using power series and thus experience the interconnection between real analysis and differential equations, find power series solutions about ordinary points, power series solutions about singular points.
		CO4: write a system in operator notation and solve by elimination method, solve a homogeneous linear system by the eigenvalue method
	MT 337 A: Operations Research	CO1: define and formulate linear programming problems and learn how to formulate a linear program from a real world problem given in words, solution of linear programming problem by graohical method
		CO2: formulate a linear problem and solve by simplex method, use duality and complementary slackness to analyse problems
		CO3: develop linear programming (LP) models for shortest path, maximum flow, minimal spanning tree, critical path, minimum cost flow, and transportation problems.
		CO4: use CPM and PERT techniques, to plan, schedule, and control project activities, solve assignment problems using the Hungarian method
	MT 337 B: Dynamical Systems	CO1: solve nonlinear ODE which do not have explicit solution
		CO2: discover geometrical properties of solution
		CO3: to recognize that even a small variation in nonlinearity of physical system allows complicated chaotic behaviour
		CO4: analyze local and global behaviour of nonlinear system

T. Y. B. Sc (Semester III)	MT 337 D: Lattice Theory	CO1:understand the concepts of ordered sets and posets with examples from social science & computer science
		CO2: the correspondence between lattice as a poset and lattice as an algebra
		CO3: learn Boolean, Modular and Distributive lattices with characterization
		CO4 drawing electronic circuits
T. Y. B. Sc (Semester III)	MT 337 F: Number Theory	CO1: Explain the concepts and language of partial differential equations.
		CO2: Understand the difference between ordinary & partial differential equation
		CO3: Classify the partial differential equations
		CO4: Solve the partial differential equation using charpits method, Jacobis method.
	MT 341: Complex Analysis	CO1: understand the algebraic and geometric properties of complex numbers, learn to represent complex numbers in cartesian coordinates as well as polar coordinates, find argument of given complex number and locate it in complex plane
		CO2: define functions of complex variables, evaluate limit of complex valued functions, determine whether a given function is continuous/ differentiable, be able to prove the Cauchy-Reiman equations and how to use them to prove that a given function is not complex differentiable, define harmonic functions and its differentiablity, explain complex entire functions.
		CO3: describe in detail some elementary but extremely important complex functions like exponential function, logarithmic function and its braches, trigonometric functions, complex exponents, hyperbolic functions
		CO4: define and evaluate integral of complex valued functions by contour integration, Cauchy's integral formulae and by applying theory of residues, be able to state, explain, prove and apply Liouville's Theorem and Fundamental Theorem of Algebra.
		CO5: compute the radius of convergence for complex power series, compute the Taylor and Laurent expansions of complex valued functions, determining the nature of the singularities and calculating residues, prove the Cauchy Residue Theorem and use it to evaluate integrals.
	MT 342: Real Analysis-II	On completion of this course students will be expected to
		CO1: define sets of measure zero, define and evaluate Reiman integration of functions, classification of Reimann Integrable functions, state, explain and prove the properties of Reimann Integration, Fundamental theorem of calculus and mean value theorem
		CO2: evaluate improper integral of first, second and third kind, determine if the given series is convergent or divergent using several tests like comparison test, test, absolute and conditional convergence, integral test for convergence of series
		CO3: detremine the convergence and divergence of series of functions, integrate and differentiate series of functions
	MT 344: Ring Theory	On completion of this course students will be expected to
		CO1: define and explain the algebraic structures of rings, fields, integral domains, the field of quotients with various examples
		CO2: have knowledge of polynomials, factorization of polynomials over a ring/ field, Euclidean algorithm, fundamental theorem of algebra
		CO3: understand the concepts of ideals, prime ideals and maximal ideals in a ring, be able to prove related theorems and examples
		CO4: expalin factorzation domain, Euclidean norm, Euclidean Domain, Gaussian integers and multiplicative norms and use it to determine units in a given ring

T. Y. B. Sc (Semester III)	MT 345: Partial Differential Equations	CO1: be able to solve ordinary differential equations in more than one variable using different techniques, find orthogonal trajectories of given system of curves on surface, solve simultaneous differential equations in three variables and pfaffian differential equations
		CO2: describe the origin of partial differential equations, be able to classify p.d.e's, solutions of partial differential equations using various methods
		CO3: know various appliactions of partial differential equations
T. Y. B. Sc (Semester IV)	MT 347 D: Graph Theory	CO1: describe the terms graph, vertex, edge, degree of vertex, path, cycle, trees. Represent graph as a matrix be able to write adjacency matrix of given graph hence find eigen values and eigen vectors
		CO2: be able to formulate graph theoratical models for real world problems and find solutions e.g. shortest path problem, coloring problem
		CO3: explore applications of graph theory in digital world
	MT 347 E: Lebesgue Integration	CO1: learn how theory gets developed from defining lebegue integratin of bounded functions then bounded measurable functions and finally lebegue integration of unbounded functions and how it actually can be applied to solve problems
		CO2: understand the difference between lebesgue integration and reimann integration and hence be able to decide which functions are lebesgue integrable and which are reiman integrable
		CO3: find fourier series of functions and its applicaions
	MT 347 F: Computational Geometry	CO1: be introduced to a new class of problems and algorithms that involve the study of geometry e.g. two and three dimentional transforms , get deeper knowledge of mathematics in relation to computer graphics and to understand the foundations of geometric algebra
		CO2: get acquaint with the typical problems of computational geometry that is curve fitting, , equation of the curve in matrix form, learn the principles of geometric algebra including its application in graphics and vision related tasks
		CO3: be able to effectively apply the techniques to specific application domains of interest or pursue independent research in this area

M. Sc. - Mathematics		
M.sc. I (Semester I)	MT 501 Real Analysis I	CO1: find exterior measure of different sets, understand measurable functions with propeties, able to identify measurable & non measurable functions
		CO2: find lebesgue intergal of functions like simple function, bounded fnctions, and the functions with fair amount of discontinuity
		CO3: be able to state, explain and prove standard theorems like Fatous lemma, monotone convergence theorem, Egonov's theorem, Fubinis theorem and more
		CO4: describe Cantor set and its properties, space of measurable and integrable functions
	MT - 502: Advanced Calculus	CO1: find derivative of a scalar field with respect to a vector, directional derivative, gradient of a scalar field, derivative of a vector field, learn matrix form of chain rule and to explain Inverse function theorem and Implicit function theorem.
		CO2: understand the concept of work as a line integral, independence of path, expalin and provethe first and the second fundamental theorems of calculus for line integral and necessary condition for a vector field to be a gradient.
		CO3: find double/ triple inetgral of functions and apply it to find area and volume, learn change of variables in double integrals, tranformation formula and finally learn change of variables in n fold integral, state and prove the uch important Green's Theorem in plane
M.sc. I (Semester I)	MT - 502: Advanced Calculus	CO4: find area of a parametric surface, evaluate surface integrals, prove the theorem of Stokes, define and understand the curl and divergence of a vector field, and Gauss divergence theorem, explain applications of the divergence theorem.

M.sc. I (Semester I)	MT-503 : Group Theory	CO1: understand thoroughly the structure of groups with examples, find all subgroups of a given group, learn their significance
		CO2: explain the development of theory to prove fundamental theorem of cyclic groups, determine the class of cyclic groups of finite order and study some noncyclic groups
		CO3: understand group homomorphism and group isomorphism and use the same to classify ableian and cyclic groups of finite order
		CO4: demonstrate understanding of permutations and symmetries in a group theoretic context, particularly the significance of Cayley's Theorem
		CO5: learn different forms of Sylow theorems with applications
	MT-504: Numerical Analysis	Upon successful completion of this course, students will be able to
		CO1: find roots of given equations by different methods e.g. fixed point interaction schemes, Newton's method, secant sethod, accelerating convergence
		CO2: solve system of linear equations by appling Gaussian elimination, pivoting strategies, errors estimates and condition number, LU decomposition, direct Factorization, iterative techniques for linear systems
		CO3: find eigen values and eigen vectors by the power method, the inverse power method, reduction to symmetric tridiagonal form also find eigenvalues of symmetric tridiagonal matrices.
		CO4: evaluate integration by Newton-Cotes Quadrature, Composite Newton-Cotes Quadrature and find the derivate of a function at a given point by applying Newton-Cotes Quadrature, Composite Newton-Cotes Quadrature.
	MT-505 : Ordinary Differential Equations	Upon successful completion of this course, students will be able to
		CO1: distinguish between linear, nonlinear, ordinary and partial differential equations, classify linear and nonlinear ODEs
		CO2: find the general solutions of second degree ordinary differential equations with constant coeffiecients by variation of parameter method, the method of undertermined coeffiecients, use of known solution to find other solutions, method of reduction of order
		CO3: explain the results Sturm separation theorem, Sturm's comparison theorem to understand the qualitative properties of solutions of ordinary differential equations of order two
		CO4: identify ordinary, regular singular points and find the series solutions of first and second order linear differential equations, describe the Indicial equations, Gauss's Hypergeometric equation
M.sc. I (Semester II)	MT- 601: Complex Analysis	CO1: understad the functions on complex plane, limit and continuity of functions of complex variables, explain exponential functions, trigonimetric functions, logarithmic functions and its branches, hyperbolic functions, differentiating complex functions.
		CO2: Prove Cauchy's theorem, Goursat theorem & its applications, evaluate integrals of complex values functions by Cauchy's integral formulae
		CO3: state and explain Morera's theorem, describe sequences of holomorphic functions, holomorphic functions defined in terms of integrals, Schwarz reflection principle, Runge's approximation theorem.
		CO4: understand meromorphic functions, determine zeros and singularities, classification of singularities as removable, pole and essential singularity, find residues and prove the residue theorem and apply it to find integration of various functions
M.sc. I (Semester II)	MT-602 : General Topology	CO1: understand the terms countable and uncountable sets, infinite sets, the axiom of choice, continuum hypothesis, well-ordered sets, the maximum principle, basis for topology, order mtopology, continuous functions, product topology, Metric topology, quotient topology.
		CO2: demonstrate knowledge and understanding of concepts such as connectedness and compactness, prove theorem on compactness, behaviour of continous functions on compact and connect sets, understand the phenomenon of one point compactification
		CO3: learn how a metric generates topology, understand metrizable spaces & prove related results including the Urysohn metrization theorem

M.sc. I (Semester II)	MT 603: Ring Theory	CO1: understand the algebraic structure of rings with examples, describe matrix ring, polynomial ring, ring of power series , ring of Laurent series, Boolean rings, opposite rings etc.
		CO2: define and explain the substructures of ring like subrings, ideals, maximal ideal, quotient rings, local rings
		CO3: understand the concept of ring homomorphism, ddetremine if the two rings are homomorphic/isomorphic, explain fundamental theorem of homomorphism and its applications
		CO4: describe the Euclidean domain, principle ideal domain, factorization domain, unique factorization domain
	MT-604: Linear Algebra	CO1: define a vector space and state its properties, compute the linear span of a set of vectors, determine the linear independence or dependence of a set of vectors, determine a basis of a vector space and compute dimension of various vector spaces
		CO2: define & identify linear transformations, determine matrix of given linear transformation, change of basis and its effect on corresponding matrix
		CO3: define and compute eigen values and corresponding eigen vectors, classify matrices reducable to daigonal and triangular form, write linear transformations in Jordan Canonical Form, rational form
		CO4: describe bilinear form, symmetric bilinear forms, quadratic forms, hermitian forms, canonical representation of unitary operator, Euclidean space, classification of quadrics in three dimensional Euclidean space
M.sc. I (Semester II)	MT- 605 : Partial Differential Equations	CO1: explain clearly concepts and theory of basic methods for solving partial differential equations.
		CO2: recognize the types of second-order partial differential equations as the wave equation, heat equation and Laplace equation, and explain their solutions
		CO3: apply eigenfunction expansion methods to solve nonhomogeneous versions of heat and wave equations.
		CO4: recognize the concept of a Green function and its applications in solving non-homogeneous problems and elementary boundary value problems
M.sc. II (Semester III)	MT 701 Combinatorics	CO1: learn counting principles, solve numerous arrangements & selections problems with & without repetition, find solutions of distribution problems
		CO2: use generating functions to solve a variety of combinatorial problems
		CO3: explain recurrence relations, recurrence relation models, divide and conquer relations, solution of linear and inhomogeneous recurrence relation, solution with generating functions
		CO4: find solution of some counting problems with Venn diagrams, inclusion-exclusion formula, restricted positions & Rook.
M.sc. II (Semester III)	MT 702 Field Theory	CO1: 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 trancendental numbers
		CO2: determine splitting and normal field of given polynomails, compute degree of extension, learn the problem of solvability by radicals
		CO3: The fundamental concept of Galois theory & find Galois group of polynomials, determine if the field extension is a Galois extension
		CO4: describe separable and inseparable extensions in detail, explain cyclotomic polynomials and its applications
		CO5: understand why geometric constructions: squaring a circle, doubling a cube & trisecting angle are impossible by using compass & scale.
	MT 703 Functional Analysis	CO1: 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.
		CO2: describe the theory of linear operators on a Hilbert space, including adjoint operators, self adjoint & unitary operators with their spectra.
		CO3: explain the role of completeness through the Baire category theorem and its consequences for operators on Banach spaces

M.sc. II (Semester III)	MT 704 Graph Theory	Upon successful completion of this course, students will be able to
		CO1: understand the definition and types of graphs like simple graph,complete graph, bipartite graph, Eulerian graph, Hamiltonian graph, palanr graph, non planar graph with various exmple
		CO2: represent graph in matrix form and find eigen values of graph and its application in different areas of mathematics
		CO3: solve transportation problem, chinese postman problem, tarvelling salesman problem, application of hand shaking lemma, find shortest spanning tree in a weighted graph
		CO4: apply algorithms for finding a maximum matching and a maximum weight matching in a bipartite graph.
	MT 705 Classical Mechanics	Upon successful completion of this course, students will be able to
		CO1: understand Newton's law in depth and know about its mathematical aspects
		CO2: solve Newton's equations for simple configurations using various methods
		CO3: understand the foundations of chaotic motions
		CO4: aware of the mathematical methods invloved and applications in physics
	MT 709 Discrete Mathematics	CO1: understand the notion of mathematical lpgic, mathematical proofs, and algorithmic thinking, and be able to apply them in proving statements and problem solving.
		CO2: determine the domain and range of a discrete or non-discrete function, graph functions, identify one-to-one functions, perform the composition of functions, find and/or graph the inverse of a function, and apply the properties of functions to applied problems.
		CO3: apply rules of inference, tests for validity, and methods of proof including direct and indirect proof forms, proof by contradiction, proof by cases, and mathematical induction and write proofs using symbolic logic and Boolean Algebra.
		CO4: solve counting problems by applying elementary counting techniques using the product and sum rules, permutations, combinations, the pigeon-hole principle, and binomial expansion.
M.sc. II (Semester IV)	MT 801 Number theory	CO1: understand the concepts of divisibility in integers, properties of primes, find gcd, lcm of any pairs of integrs & prove related results.
		CO2: expalin the relation of congruence in integers, state and prove some famous theorems viz. Fermat'sand Euler's theorems, Wilson's Theorem, Chinese remainder Theorem and solve equations involving congruences
		CO3: 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
		CO4: understand the concepts of quadratic recipoprocity Quadratic residue, Legendre's symbol, its properties, quadratic reciprocity law, Jacobi symbol and its properties.
	MT 802 Differential Geometry	Upon successful completion of this course, students will be able to
		CO1: 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
		CO2: understand the Weingarton Equations, mean curvature and Gaussian curvature, explain geodesics as distance minimizing curves on surfaces, find grpahs and level curves, use Riemannian metrics on given manifolds to calculate volumes, the Levi-Civita connection, curvatures, geodesics, with emphasis on surfaces
		CO3: calculate critical point indices of a differentiable map on a given manifold, and use this to describe its topological properties
		CO4: 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 (Semester IV)	MT803 Fourier Analysis and boundary value problems	Upon successful completion of this course, students will be able to
		CO1: understand the Fourier series representation of periodic functions.
		CO2: demonstrate how differential equation can be useful in many types of problems likes heat equations ,wave equations.
		CO3: 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	Upon successful completion of this course, students will be able :
		CO1: recognize lattices, complete ordered sets and their varieties,
		CO2: know the standard tools of lattice theory,
		CO3: know the main representation theorems of lattices
		CO4: to make use all the above both inside the theory and applications.
	MT805 Operations Research	CO1: define and formulate linear programming problems and appreciate their limitations.
		CO2: solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained and translate solutions into directives for action
		CO3: develop mathematical skills to analyse and solve integer programming and network models arising from a wide range of applications.
M.sc. II (Semester IV)	MT 806 Topics in Algebra	CO1: define irreducible and prime elements of commutative rings and calculate the groups of units of some rings, calculate Euclidean functions for some rings such as Gaussian integers
		CO2: know constructions like tensor product and localization, and the basic theory for noetherian rings and Hilbert basis theorem
		CO3: explain integral dependence, and the Noether normalization lemma, have insight in the correspondence between ideals in polynomial rings, and the corresponding geometric objects: affine varieties.
		CO4: explore basic theory for support and associated prime ideals of modules, and know primary decomposition of ideals in noetherian rings
	MT807 Topics in Analysis	Upon successful completion of this course, students will be able to
		CO1: classify integral equations and apply functional analytic methods on operators and integral equations
		CO2: analyse the methods such as integral transforms, Green's function, the concept of resolvent, uniqueness theorems, Fredholm theory.
		CO3: understand the applicatio of the theory of integral equations to other disciplines like applied mathematics, science and engineering.

B.Sc. (Physics)		
Class	**Course**	**Course Outcomes**
F. Y. B. Sc. (Annual)	Mechanics (Paper I) (Section I)	CO1. An understanding of Newton's laws of motion and applying them in calculations of the Motion of simple systems.
		CO2. Understanding the concepts of work, energy and power.
		CO3. Understanding of the concepts of conservation of energy, liquid properties such as surface tension and viscosity the concepts of elasticity and be able to perform calculations using them.
		CO4. Understanding the concept of atmospheric pressure, Bernoulli's principle and venturimeter.

F. Y. B. Sc. (Annual)	Heat and Themodynamics (Paper I) (Section II)	CO 1. Properties & relationships between the thermodynamic properties of a pure substance ideal gas equation and its limitations and real gas.
		CO 2. The laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process, & calculate thermal efficiency.
		CO 3. Analyze the refrigerators and heat pumps and calculate coefficient of performance.
		CO4. Understanding the property ENTROPY and derive some thermodynamical relations.
		CO5. Understanding the types of thermometer and their usages.
	Physics Principles & Applications (Paper II) (Section I)	CO 1. Understanding of the various atomic theories and calculation of energy value of atom.
		CO 2. Understanding of electromagnetic waves and its spectrum, types and sources of electromagnetic waves and applications
		CO 3. The general structure of atom, spectrum of hydrogen atom.
		CO4. Understanding of the atomic excitation and LASER principles. Different bonding between in atoms and molecules.
	Electromagnetics (Paper II) (Section II)	CO 1. Exposure to the fundamental laws of electricity, magnetism and their applications in day to day life.
		CO 2. Making the awareness to students about Gauss‘s law, Coulomb‘s Law, Biot-Savart's law and Ampere's law.
		CO3.Development of understanding among the students about principles of electromagnetic induction and magnetic induction.
		CO4. Knowledge about the basics of magnetostatic and magnetization of material.
F. Y. B. Sc. (Annual)	Practical Paper	CO1. Exposure of techniques of handling simple instruments and also ertain mechanical and cthermal properties of matter.
		CO 2. Acquire technical and manipulative skills in using laboratory equipment, tools, and materials.
		CO3. Demonstrate an ability to collect data through observation and/or experimentation and interpreting data.
		CO_5 Demonstrate an understanding of laboratory procedures including safety, and scientific methods.
		CO6. Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.
S. Y. B. Sc. (Sem. I)	(PH 211) Mathematical Methods in Physics I (Paper-I)	CO 1 Understand the complex algebra useful in physics courses.
		CO 2. Understand the concept of partial differentiation.
		CO 3.Understand the role of partial differential equations in physics.
		CO4. Understand vector algebra useful in mathematics and physics.
		CO5.Understand the singular points of differential equation.
	(PH 212) Instrumentation (Paper-II)	CO1.Understand the functions of different instruments.
		CO2.Use different instruments for measurement of parameters.
		CO3. Design experiments using sensors.
S.Y.B.Sc. (Sem. II)	(PH221) Oscillations, Waves and Sound (Paper-I)	CO 1. Understand the physics and mathematics of oscillations.
		CO 2. Solve the equations of motion for simple harmonic, damped, and forced oscillators.
		CO 3. Describe oscillatory motion with graphs and equations, and use these descriptions to solve problems of oscillatory motion.
		CO4. Explain oscillation in terms of energy exchange, giving various examples.

S.Y.B.Sc. (Sem. II)	(PH221) Oscillations, Waves and Sound (Paper-I)	CO5. Understand the mathematical description of travelling and standing waves.
		CO6. Explain the Doppler effect, and predict in qualitative terms the frequency change that will occur for a stationary and a moving observer.
		CO7. Explain in qualitative terms how frequency, amplitude, and wave shape affect the pitch, intensity, and quality of tones produced by musical instruments.
	(PH 222) Optics (Paper-II)	CO 1. Acquire the basic concepts of wave optics
		CO 2. Describe how light can constructively and destructively interfere
		CO3. Summarize the polarization characteristics of electromagnetic waves
		CO4. Understand optical phenomena such as polarization, birefringence, interference and diffraction in terms of the wave model.
		CO5. Analyze simple examples of interference and diffraction phenomena.
		CO6. Be familiar with a range of equipment used in modern optics.
S.Y.B.Sc. (Sem. II)	(PH 223) Practical Course (Annual)	After completing this course students are able to
		CO 1. Use various instruments and equipment.
		CO2. Design experiments to test a hypothesis and/or determine the value of an unknown quantity.
		CO3. Investigate the theoretical background to an experiment.
		CO4. Set up experimental equipment to implement an experimental approach.
		CO5. Analyse data, plot appropriate graphs and reach conclusions from your data analysis.
		CO6. keep a well maintain instructive lab. Logbook.
T. Y. B. Sc. (Sem. III)	(PH 331) Mathematical Methods in Physics II (Paper I)	CO1. Introduction of Cartesian, Sperical polar and Cylindrical coordinate systems.
		CO2. Introduction to postulats of special relativity, Lorentz transformation and its applications
		CO 3. Understand & to get solution of the ODE & singular differential equations in physics using sep.of variables & power series solutions.
		CO4. To study special functions their recurrence relations and their properties.
	(PH 332) Solid State Physics (Paper II)	CO1. Have a basic knowledge of crystal systems and spatial symmetries.
		CO2. Be able to perform structure determination of simple structures by XRD & Characterization techniques like TGA, UV- VIS & SEM.
		CO3. Know Bloch's theorem and origine of energy bands which distinguish between metal, semiconductor and insulator.
		CO4. To study properties of Diamagnetic, paramagnetism and ferromagnetism.
	(PH 333) Classical Mechanics (paper III)	CO1. Training the students of B. Sc. class in the Mechanics of the particles.
		CO2. Motion of central force, scattering of particles.
		CO3. Lagrangian and Hamiltonian formalisms to an scope that they can use these in the modern branches.
		CO4. Understanding of Central force, Reduction of two body problem into equivalent one body problem, Motion in inverse square law force field and to state Kepler‟s laws.

T. Y. B. Sc. (Sem. III)	(PH 334) Atomic and Molecular Physics (Paper IV)	CO1. Describe the latest vector atom model and drawbacks of previous models.
		CO2. Two valene electron system, LS ang JJ coupling schemes.
		CO3. Know and understand the normal and anomalous Zeeman effect, Paschen Back and stark effect.
		CO4. Studying the X-Ray and characterization by using X-Ray.
		CO5. To study Molecular and Raman Spectroscopy.
	(PH 335) Computational Physics (Paper V)	CO1. To understand fundamentals of C language
		CO2. Develop algorithm/flowcharts for problem solving and writing programs
		CO3. Learn to use functions, arrays, pointers and file handling in C language
		CO4. Learn Graphics in C.
		CO5. Identify diferent errors in computation and how to ovecome it like round off, numerical systematic, inherent, etc.
		CO6. To develop C programs for finding root of equation using Bisection and Newton Raphson method.
		CO7. To develop C program for finding the integration by Trapezoidal and simpsions 1/3 rd rule.
	(PH 336) Elective 1 (E) Renewable Energy Sources (Paper VI)	CO1. To study conventional and non conventional energy resources.
		CO2. Structure of sun, Solar radiation outside and on earth.
		CO3. Instruments to study solar energy like Liquid flat plate collector, solar cooker, solar heater, solar dryer, etc.
		CO4. Study of Biogas and principle of biodigestion.
T. Y. B. Sc. (Sem. IV)	(PH 341) Classical Electrodynamics (Paper I)	CO1. To understand the covariant formulation of electrodynamics to explore the unification of electricity and magnetism.
		CO2. Origin of the electromagnetic radiation by an accelerating charge particle: Its applications to linear and circular accelerators.
		CO3. Understanding of the scattering of electromagnetic wave by free and bound electron.
	(PH 342) Quantum mechanics (PaperII)	CO1. Show an understanding of wave mechanics;
		CO2. Know the concept of operators in quantum mechanics.
		CO3. Perform calculations on wave functions, and solve the Schrödinger equation for simple potential problems.
		CO4. Apply Schrodinger‘s equation in Hydrogen atom
T. Y. B. Sc. (Sem. IV)	(PH 343) Thermodynamics & Statistical (PaperIII) Physics	CO1. Describe the latest vector atom model and drawbacks of previous models, and Statistical Physics
		CO2. Know & understand the normal & anomalous Zeeman effect, Paschen Back effect & Stark effect as well as Raman Effect basically,
		CO3. Define and discuss the concepts of microstate and macrostate of a model system,
		CO4. Define and discuss the Boltzmann distribution and the role of the partition function.
		CO5. Define the Fermi-Dirac and Bose-Einstein distributions; state where they are

T. Y. B. Sc. (Sem. IV)	(PH 344) Nuclear Physics (PaperIV)	CO1.Demonstrate knowledge and understanding of scientific and technological applications, of Nuclear Physics as well as their social, economic and environmental applications.
		CO2. Demonstrate comprehension of physical reality through estimation, approximation, and mathematical modeling, and understand how small number fundamental physical principles underlie a huge variety of interconnected natural phenomena,
		CO3. Able to explain the Rutherford's experiment, Nuclear Radiation and detector
T. Y. B. Sc. (Sem. IV)	(PH 345) Electronics / Advanced Electronics	CO1. Electronics is nothing but efficient applications of semiconductor materials.
		CO2. Here students learn various electronic devices with fundamental and application point of view.Define and
		discuss Algebraic and K-map simplification methods. Implementation of Boolean equation.
		CO3. Be able to explain Flip-Flop (RS, JK, T and D) i. e combinational logic circuits adder and subtractors.More about sequential logic circuits i.e. Asynchronous.
	(PH 346) Elective LASER (Paper VI)	CO1. Introduction to the LASERs.
		CO2. Basics of lasing action like pumping and emission.
		CO3. Characteristics, Types and applications of lasers.
Annual Practical Courses	(PH347) Lab. Course I	CO1. Laboratory course I deals with the experiments based on fundamental concepts in Physics.
	(Phy348) Lab. Course II	CO2.Laboratory course II involve experiments using electronic devices and program writing with C.
	(PH 349) III (Project)	CO3.Laboratory course III gives free hand to student to work in any physics subject to carry

M. Sc. (Physics)		
M. Sc. I (Semester I)	(PHYUT 501) Classical mechanics	CO1. The outcome of the course on Mathematical Physics-I is to equip the P.G. student with the mathematical techniques.
		CO2 Needs for understanding theoretical treatment in different courses taught in this class.
		CO3. Developing a strong background if he/she chooses to pursue research in physics as a career.
	(PHYUT 502) Electronics	CO1.The aim and objective of the course on Statistical Mechanics is to equip the M.Sc. student.
		CO2. The techniques of Ensemble theory so that he/she can use these to understand the macroscopic properties of the matter in bulk in terms of its microscopic constituents.
	(PHYUT 503) Mathematical Methods in Physics	CO1 .Use mathematical formulations, analyses and models to obtain insight in specialized areas of Physics.
		CO2. Be able to apply skills of mathematical, statistical and physical modeling in applied fields and on technological problems.
		CO3. Be able to carry out, present & document a comprehensive independent work,demonstrating command of terminology of the subject area.
		CO4. Identify different special mathematical functions.
		CO5. Apply techniques of vector analysis, such as gradient of scalar, divergence of vector, curl of vector,
		CO6. Study of special functions of mathematical physics

M. Sc. I (Semester I)	(PHYUT 504) Atoms and Molecules	CO1.Knowledge of the observed dependence of atomic spectral lines on externally applied electric and magnetic fields.
		CO2. This course is to state and justify the selection rules for various optical spectroscopies in terms of the symmetries of molecular vibrations.
		CO3.List different types of atomic and molecular spectra and related instrumentation.
	(PHYUT 505) Experimental Techniques in Physics	CO1. The outcome of the course on Physics Laboratory I is to expose the students of class to experimental techniques in general physics.
		CO2. Electronics, nuclear physics and condensed matter physics so that they can verify some of the things read in theory here or in earlier classes and develop confidence to handle sophisticated equipment.
		CO3. To introduced with Vacuum Physics like pumps to produce different vacuum and gauges to record those vacuum.
		CO4. Introduction to potential fields of applications of Vacuum.
		CO5. study of low temperature physics, techniques and applications.
		CO6. Introduction to Signal and Analysis of signals.
	Physics Lab 1 - (PHYUP 506)	CO1. The techniques of Ensemble theory so that he/she can use these to understand the macroscopic properties of the matter in bulk in terms of its microscopic constituents.
		CO2. In earlier classes and develop confidence to handle sophisticated equipment
		CO3. Familiarization with the basics of materials science.
		CO4. Understanding of the fundamentals of Hall effect and Hystersis.
M. Sc. I (Semester II)	(PHYUT 601) Electrodynamics	CO1. The Classical Electrodynamics course covers Electrostatics and Magnetostatics including Boundary value problems.
		CO2. Maxwell equations and their applications to propagation of electromagnetic waves in dielectrics, metals and plasma media.
		CO3. EM waves in bounded media, waveguides, Radiation from time varying sources.
		CO4. It also covers motions of relativistic and nonrelativistic charged particles in electrostatic and magnetic fields.
	(PHYUT 602) Solid state physics	CO1. The outcomeof the course on solid state physics is to familiarize the students with relatively advanced topics.
		CO2. Optical properties, magnetism, superconductivity, magnetic resonance techniques.
		CO3. Disordered solids confident to use the relevant techniques in their later career.
M. Sc. I (Semester II)	(PHYUT 603) Quantum Mechanics I	CO1. The outcome of the course on Quantum Mechanics is to introduce the students to the formal structure of the subject.
		CO2. Equip the students with the techniques of angular momentum, perturbation theory and scattering theory so that they can use these in various branches of physics as per their requirement
	(PHYUT 604) LASERs	CO1. Introduction to the LASERs.
		CO2. Basics of lasing action like pumping and emission.
		CO3. Characteristics, Types and applications of lasers.

M. Sc. I (Semester II)	(PHYUT 605) Experimental techniques in physics II	CO1. The outcome of the course on Physics Laboratory I is to expose the students of class to experimental techniques in general physics.
		CO2. Electronics, nuclear physics and condensed matter physics so that they can verify some of the things read in theory here or in earlier classes and develop confidence to handle sophisticated equipment.
		CO3. Introduction to different radiation, their sources and detectors.
		CO4. To characterize the materials by structurs (XRD & neutron diffraction) and thermal analysis (Thermo-gravimetric (TGA), Differential Thermal Analysis (DTA) & Differential Scanning Calorimetry (DSC)).
		CO5. To be able to characterized the materials by morphology (SEM, FESEM, TEM & SAED also by AFM, STM).
	(PHYUP 606) Physics Lab. II	CO1. In earlier classes and develop confidence to handle sophisticated equipment.
		CO2. To built and understand the working of simple electronic circuits.
		CO3. To understand the working of gates, switches, power sources and loops.
		CO4. TO get knowledge of IC 741 as op-amp, Filters and Trigger.
M. Sc. - II Sem. III	(PHYUT 701) Statistical mechanics in physics	CO1. The outcome of the course on Statistical Mechanics to expose students to the theoretical techniques
		CO2. Understanding the interacting systems, phase transitions and the non-equilibrium phenomena.
		CO3. Application in different branches of physics, chemistry and biology.
	(PHYUT 702) Quantum mechanics II	CO1. Understanding the basic principles of quantum mechanics.
		CO2. Solve the Schrodinger equation to obtain wave functions for some basic, physically important potential, and estimate the shape of the wave function based on the shape of the potential.
		CO3. Understand the role of uncertainty in quantum physics, and use the commutation relations of operators to determine whether or not two physical properties can be simultaneously measured.
		CO4. Develop a knowledge and understanding of perturbation theory and level splitting.
	(PHYDT 703) Physics of thin films	CO1. Handle different types of thin film deposition techniques.
		CO2. Explain the effect of various parameters on thin film growth.
		CO3. Characterize thin films for the electrical, optical and structural properties.
		CO4. Deposition of CdS thin film by spray pyrolysis and determination of its thickness by gravimetric weight difference method.
M. Sc. - II Sem. III	(PHYDT 704) Energy studies I	CO1. The outcome of the course on Science of renewable Energy Sources is to students to the basicsof the alternative energy sources like solar energy, hydrogen energy, etc.
	(PHYDP 705) Special Lab. I	CO1. To study characteristics of solar cell, solar power photovoltaic systems and their combinations.
		CO2. Study of solar collectors.
		CO3. Deposition of thin films by vacuum evaporation, spin coating & dip coating.
		CO4. Measurement of resistance & thickness of thin films.

M. Sc. - II Sem. III	(PHYUP 706) Physics Lab. III	CO1. Understanding of the general concepts in C language.
		CO2. Application of Physics concepts in solving problems.
		CO3. Familirization of statements and array of C language.
		CO4. Emphasis on the significance of C+ theory.
M.Sc. - II Sem. - IV	(PHYUT 801) Nuclear physics	CO1. Understand the fundamental principles and concepts governing nuclear and particle physics.
		CO2. Demonstrate knowledge and understanding of scientific and technological applications, of Nuclear Physics as well as their social, economic and environmental applications
		CO3.Demonstrate comprehension of physical reality through estimation, approximation, and mathematical modeling, and understand how small number fundamental physical principles underlie a huge variety of interconnected natural phenomena.
		CO4. Able to explain the Rutherford‘s experiment, Nuclear Radiation and Charged Particle Accelerators
	(PHYUT 802) Material science	CO1. Various production techniques and applications.
		CO2. Fracture analysis for different metals.
		CO3. Strengthening mechanisms and Applications of metallic and non metallic materials.
		CO4. Study of different material properties like electric, mechanical , thermal etc.
	(PHYDT 803) Physics of Nanomaterials	CO1. The outcome of the course on Physics of Nano-materials is to familiarize the students.
		CO2. The various aspects related to preparation, characterization and study of different properties of the nanomaterials so that they can pursue this emerging research field as career.
		CO3. Understanding the laboratory experiments to investigate the properties of materials.
		CO4.Learning of the operation of the advanced characterization instruments.
	(PHYDT 804) Energy studies II	CO1. 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.
		CO2. TO study hot water system, determination of heat loss coefficient in flat plate collector.
		CO3. Study of solar dryer, solat still.
		CO4. Synthesis of metallic nanoparticals by wet chemical method.
	(PHYUP 806) Physics Lab. IV (Project)	CO1. The outcome of Major project work is to expose the students to preliminaries and methodology of research in Theoretical Physics and Experimental Physics.
		CO2. Creation of opportunity to participate in some ongoing research activity and development of a laboratory experiment.

B. Sc. - Zoology		
F. Y. B. Sc (Annual)	Zoology paper I	CO1. To provide knowledge about various animal sciences from primitive to higher evolved animal groups.
		CO2. To inculcate intrest for the studies in Zoology.
		CO3. To make the students aware about conservation and sustainable use of biodiversity
		CO4. To highlight the potential of various branches of zoology to become an enterpreneur.
F. Y. B. Sc (Annual)	Zoology paper II	CO1. To Understand the cell and cell organelles.
		CO2. To Understand the Cell and cytoplasmic constituents
		CO3. This course introduces basic mendilian inheritance.
	Practical Paper III	CO1. Practical course is framed with basic information of primitiv highly evolved animal group.
		CO2. The practical course gives detailed knowledge of the Classification and Nomenclature systems
S. Y. B. Sc. (Semester I)	Animal Systematics and Diversity III	CO1. To Introduce taxonomy and animal systematics
		CO2. Learn basic of animal Classification and role of animal taxonomy
		CO3. Learn the basic principles of classification and nomenclature and data used in the classification
		CO4. This course will develop intrest of the students by studing various sources of data used in the systematics
	Applied zoology I	CO1. To make the students aware of applications of Zoology subject in various industries.
		CO2. This course deals with the study applied cources.
		CO3. Course also gives awareness about applied zoology in people.
S. Y. B. Sc. (Semester II)	Animal Systematics and Diversity IV	CO1. This course will provide salient features of animal classes (Reptilia,Aves,Mammalia)
		CO2. Student will study the model oranism Scoliodon.
		CO3. Students will get the knowledge of Poisonous and non poisonous snakes.
		CO4. After completion of this course, the students will learn how the apply is exactly .
	Applied zoology II	CO1. This course deals with study of basics of rearing the Honey Bee and Silk worm.
		CO2. Students are expected to gain the skill to rearing of hony bee and silk worm.
		CO3. Students will understand the economic importance of sericultur and apiculture.
		CO4. In plant genetic engineering students are expected to learn various steps in plant genetic engineering.
		CO5. Students are expcted to learn various products and biproducts of sericultur and apiculture.
	Practical Paper III	CO1. This is the practical course, based on all the theory courses and gives detailed demo equipment of applied cources.
		CO2. This course helps in understanding of the morphological characters and classification by studying animal families.
		CO3. The student will experience handling various beekeeping equipment.
		CO4. The main outcome of this course is to underatand theory by direct practice in laboratory.

T. Y. B. Sc. (Semester I)	Animal Systematics and Diversity V	CO1. Student will study the physiology and Morphology of Pila globosa.
		CO2. To Understand various life forms of the vertebrates.
		CO3. Student will learn comparative study of vertebates.
T. Y. B. Sc. (Semester I)	Cell and Molecular Biology	CO1. To Understand the cell and cell organells in detail
		CO2. To Understand the Cell and cytoplasmic constituents
		CO3. The course will introduce Molecular Biology and its bsics
		CO4. Student will understand how the cell and molecular biology study plays vital role in understanding Animal life
T. Y. B. Sc. (Semester I)	Biological Chemistry	CO1. Course will help to learn biomolecules like Protein, Amino acid, Carbpohydrates etc .
		CO2. To understand biochemical and Physiological process in Animal cell.
	Environmental biology and Endocrinology	CO1. Students will learn about ecosystem.
		CO. To understand the knowledge about Environmental Pollution.
		CO3. To study the bioindicaters and Environmental monitoring.
		CO4. To study public Health and Hazards.
T. Y. B. Sc. (Semester I)	Parasitology	CO1. To understand basics in Parasitology.
		CO2. Students will learn about Host-Parasites relationship.
		CO3. Subject also introduce Parasitological significance of Zoonosis.
	Cellbiology	CO1. To Understand the cell and cell organells in detail
		CO2. To Understand the Cell and cytoplasmic constituents
T. Y. B. Sc. (Semester II)	Biological Techniques	CO1. To understand the application of various techniques in Zoology.
		CO2. Learn about microscopy and Heamatological techniques.
		CO3. Student will study about principle of Stain and Staining.
		CO4. To understand role of biotechnology for the society
	Mammalian phisiology and Endocrionology	CO1. The students will aware the scope of Mammelian physiolgy and Endocrinology.
		CO2. It also focus on physiolosical systems of Mammals.
		CO3.Student will also know the Mechanism on hormonal action.
		CO4. Main objective of the course is to learn basics Anatomy in Mammals.
	Genetics and Molecular biology	CO1. Course will help to understand how the charactes are transfered from generation to generation
		CO2. Learn mendelian genetics and population genetics
		CO3. learn the central dogma in molecular biology.
		CO4. understand Prokaryotic and Eukaryotic cell gene regulation.

T. Y. B. Sc. (Semester II)	Organic Evolution	CO1. Evolution will give information of Biogeographical relation of the animal
		CO2. Evidences of the Evoluation are also overlooked
		CO3. understand the evolution of living organisms.
T. Y. B. Sc. (Semester II)	General Embyology	CO1. To learn importance of Developmental biology.
		CO2. To study the gametogenesis.
		CO3. To understand development of chick Embryology.
	Medical Entomology	CO1. To understand Morphological and anatomical struture of insect.
		CO2. To learn how insect study importat for human helth.
		CO3. To understand the insect as causing agent of human diseases.
Annual	Practical Course- I	CO1. To understand external characters and digestive,nervous systemn in Pila.
		CO2. To learn how cells are divided by studing mitosis
		CO3.To study permanent slide preparation.
Annual	Practical Course- II	CO1. To learn the heridity and varioation
		CO2. To study the practically preparation of polytene chromosome.
		CO3. To study various fossile forms
		CO3. To learn various physiological and biochemical reactions in animal.
	Practical Course- III	CO1. Student will awere about houshold pest.
		CO2. To learn how cells are divided by studing mitosis
		CO3. To study the temporary preparation of chick embryo.

Bachelor of Vocational Courses

B. Voc. (Renewable Energy & Management)		
First Year	**Course**	**Course Outcomes**
Semester I	Introduction to Renewable Energy Sources	On completion of this semester students will be expected to
	Basics Electronics	CO1. get knowledge of various forms of energiy sources
	Basic Physics	CO2. understand overall energy demand and availability of energy sources to meet these demands
	Practical – I (Life Skills and Software Tools)	CO3. understand science behind various energy sources
	Practical – II (Based on Theory)	CO4. This course develops practical skills among the student, which leads to develop their knowledge of analog circuits in different applications.
Semester II	Sustainable Development and Energy	CO1. This semester is designed to make students familiar with sustainable development
Semester II	Applications of Solar Energy	CO2. The student will learn solar energy and its conversion
	Bio-Energy	CO3. Student will understand photovoltaics and photothermal applications of solar energy
	Practical – III (Industrial Training & Field Work)	CO4. understand the biogas systems and biofuels
	Practical – IV (Based on Theory)	CO5.Through project and field work, student is expected to aquire practical skills necessary in the industry

B. Voc. (Green House Management)		
First Year	**Course**	**Course Outcomes**
Semester - I Skill Components	Soil Science	On completion of this semester students will be expected to
	Soil Cultivation	CO1. get knowledge of various forms of cultivation practices of vegetable, fruits etc.
	Propagation Techniques-I	CO2. students will get idea about role of soil and soil science in the cultivation of different kinds of plnats
	Propagation Techniques-II	CO3. understand science behind the every small thing which is necessary for the overall growth of plants
	Practical: (Based on Theory)	CO4. Practical based on the theory will expertise in the studied courses
General Education Component	Communication Skills-I	CO5. General communication skill will enhance the ability and will help in marketing as well overall personality development
	Basics of Plant Biology- I	CO6. General components are necessary to understand the need of plant biology in overall understanding of the cultivated plants.
	Nursery Operations-I	CO7.Nurery operation focuses on the overall nursery development and its role in the development of healthy plantlets
	Practicals	Practicals based on theory of General Education Componenet
Semester -II Skill Components	Green House Construction	CO1. This semester is designed to make students familiar with sustainable development in green house management
	Green House Management Basics-I	CO2. The studen will study construction of green house with its basics
	Green House Management Basics-II	CO3. students will have direct management pratice and study of its overall management
	Economics of Green House Setup	CO4. Setup of green house is the basic which can be understud by studying economics of greenhouse setup
	Practicals based on theory of Skill Component	CO5.Through project and field work, student is expected to aquire practical skills necessary in the industry
		CO6. Practicals based on the theory will easy mode of understaning
General Education Component	Communication Skills-II	CO7. it will help for the personality development and marketing skill
	Basics of Plant Biology- II	CO8. basics of plant biology is focused on growth and development of the plants
	Nursery Operations-II	CO9.Nurery operation focuses on the overall nursery development and its role in the development of healthy plantlets
	Practicals based on theory of General Education	Practicals will give direct hands on application in all the studied theroy courses.

B. Voc. Analytical Techniques in Pharmaceutical Analysis		
First Year	**Course**	**Course Outcomes**
Semester-I	General components	CO1: Learn general language communication and personality development skills
		CO2: explore laboratory results in graphical manner by using knowledge of applied mathematics
		CO3: take precautions in laboratory while handling the chemicals and utilities by learning basics of environmental science.
		CO4: understand theoretical skills regarding sample testing
	Skill components	CO1: understand correction & correlation of analytical data
		CO2: find out errors & deviation in analysis results
		CO3: sort out problems associated with various titrations.
		CO4: do permutations & combinations of molar values by using Mole Concepts.
		CO5: work on various modern equipments e.g. Karl-Fischer autotitrator
		CO6: do practical of pharmaceutical products.
Semester-II	General components	CO1: Learn basics in computer language and tools.
		CO2: understand polymer chemistry and commercial polymers like resins, Silicon polymers, Nylon, Rubber etc.
		CO3: solve the problems regarding numerical & computer programming.
		CO4: understand theoretical skills regarding chemistry software like Chem-draw, ISI draw etc.
Semester-II	Skill components	CO1: capture strong theoretical knowledge of basics in molecular & atomic spectroscopy
		CO2: learn theoretical aspects of modern spectroscopic techniques like Infra-red & UV-Visible spectroscopy
		CO3: workout analysis of Organic Compounds using premier Qualitative & Quantitative methods of analysis.
		CO4: do titrations using Instrument like pH meter, Conductometer, Refractometer etc.
		CO5: Deal with sophisticated instrument e.g. HPLC, IR, UV-Visible spectrometer etc.

Community College

Diploma in Medical Laboratory Technology (DMLT)	
Paper I: Anatomy & Physiology	CO1: Helps in understanding the structural peculiarities of the circulatory system, excretory system, respiratory system, endocrine system, arterial system, venous system.
	CO2: It also helps in understanding the Blood Morphology, Chemistry & Function.
	CO3: After completion of this course students will hands-on over the Preparation of various kinds of Solutions like Percent Solution, Saturated Solution, Buffer Solution.
Paper II : HISTOPATHOLOGY & CLINICAL PATHOLOGY	CO1: Within these course students concepts of cell and tissues are cleared.
	CO2: Histopathology refers to the microscopic examination of tissue in order to study the manifestations of disease.
	CO3: Clinical pathology supports the diagnosis of disease using laboratory testing of blood and other bodily fluids like semen, stool , urine and microscopic evaluation of individual cells.
Paper III: BIOCHEMISTRY	CO1: After the completion of this course students are able to do all types of biochemical test like Estimation of blood glucose level, blood urea level, serum creatinine, serum calcium alkaline phosphates lipid profile test ,liver profile test etc.
	C02: Study of Laboratory Equipment glasswares, chemicals, other laboratory materials etc .
	C03: To undustanding the basic concept s of Quality control, Management and Laboratory Ethics
Paper IV: MICROBIOLOGY	C01: To study of Microscope – Tyes, Uses & Care.
	C02: TO study the various type of micro-organisms eg. Bacteria, viruses etc
	C03: To Study General Characters & Classification of bacteria & Fungi and Antigen Antibody reactions.
	Principle of Staining methods & Preparation of reagents
Paper V: Heamatology & blood banking	C01: To study the morphology of cells
	Co2 : To study the blood bank techniques & blood collection methods
PaperVI: COMMUNICATION SKILLS & PERSONALITY DEVELOPMENT	C01: To improve the communication skills of students
	C02: to improve the body language an Verbal and Non verbal communication of student .
	C03: to study the various types of communication techniques