Course Outcomes (Cos) of Bachelor of Arts (B.A.)		
Department of English		
Class	**Course**	**Course outcome**
F.Y.B.A. (Annual)	Compulsory English Visionary Gleams	CO1. Development of literary and linguistic taste of the newly admitted students.
		CO2. Improvement of communication skills in English
		CO3. Enrichment of Grammatical sense and writing skills.
		CO4. Developing an ability for dialogue and group discussion.
	Optional English	CO1.Development of liking for English literature
		CO2.Clear understanding of the aims and objectives of course
		CO3.Knowledge of the basic function of Literary Language.
	Functional English (Paper I & II)	CO1. Development of basic skills of spoken English and effective writing.
		CO2. Introduction of basic skills of computer.
FY.BCOM. (Annual)	Compulsory English	CO1. Introduction of the beauty of prose and poetry and improvement of communicative English.
	Additional English	CO1. Exposition of students to old and new literary extracts
S.Y.B.A. (Annual)	Compulsory English Literary Landscape	CO 1Strengthening the literary and linguistic test of the students.
		CO 2.Improvement of communication skills in English
		CO 3. Enrichment of Grammatical sense and reading skills.
		CO 4. Ability of group discussion and oral presentation
	Special English Paper I	CO 1. Introduction of elements of drama.
		CO 2. Development of Students liking for the stage.
		CO 3. Enhancement of the sense of technique of characterization.
		CO 4. Improvement of stage daring of the students.
	General English Paper II	CO 1. Familiarizing the students with the minor form of literature .
		CO 2. Introduction of short story as Genre of Literature.
		CO 3. Familiarizing with the basics of English Language.
		CO 4. Awareness of phenomena of world English.
	Functional English (Paper III & IV)	CO1. Enrichment of written communication among students.
		CO2. Improvement of verbal communication of students
T.Y.B.A. (Annual)	Compulsory English	CO 1. Improvement of speaking skills in English.
		CO 2. Enrichment of the Grammatical sense and news reporting.
		CO 3. Skills for comparing and rapid reading.
		CO 4. Perfection of the use of idioms and phrases
	Special English Paper III	CO.1. Introduction of the novel as genre of literature
		CO2. Sensitization of the element of fiction
		CO.3. Knowledge of the novels
		CO.4.Introduction to the critical analysis of prose passages
	Special English Paper IV	CO.1.Enrichment of critical views of the students
		CO.2.Development of broad views in students about various approaches
		CO.3. Study of the interpretation of various critics
		CO.4.Knowledge of different critical terms
	General English Paper III	CO.1.Enrichment of competence in English
		CO.2.Introduction of clauses and phrases
		CO.3.Illustration of pragmatics
		CO.4. Development of the poetry writing skill
	Functional English (Paper V & VI)	CO1. Introduction to print media and writing for mass media.
		CO2. Development of Entrepreneurship and mastering the skills of oral communication.

Department of Marathi		
F.Y.B. A. G,1	आधुनिक मराठी वाङ्मय	CO 1 मराठी विषयाच्या अभ्यासाचा स्थूलमानाने परिचय करुन देणे.
		CO 2 विद्यार्थ्यांची वाङ्मयीन अभिरुची व आस्वाद यांचा विकास करणे.
		CO 3 व्यक्तिमत्त्व विकासात भाषेचे महत्त्व विकसित करणे.
S.Y.B. A. G,2	आधुनिक मराठी वाङ्मय	CO 4 आधुनिक मराठी वाङ्मय चरित्र व आत्मचरित्र या साहित्य प्रकाराची ओळख करुन देणे.
		CO 5 शुद्धलेखन व पारिभाषिक संज्ञा यांचे ज्ञान करुन देणे.
		CO 6 आधुनिक मराठी साहित्य प्रकारातील चरित्र व आत्मचरित्र यातील निवडक लेखांचा आस्वाद व मूल्यमापन करण्याची विद्यार्थ्यांमध्ये क्षमता विकसित करणे.
T.Y.B. A. S,1	मराठी साहित्यातील विविधसाहित्य प्रकार	CO 7 नाटक, कांदबरी साहित्य प्रकाराचे स्वरुप व वैशिष्ट्ये, जाणीव निर्माण करणे.
		CO 2 साहित्य प्रकाराचा परस्परसंबंध लक्षात आणून देणे.
		CO 3 अर्वाचीन कालखंडातील श्रेष्ठ साहित्यकृतीच्या आधारे संस्कारयुक्त अभिरुची घडविणे.
T.Y.B. A. S2	आर्वाचीन मराठी वाङ्मयाचा इतिहास	CO 1 अर्वाचीन वाङ्मयीन कालखंडातील सामाजिक, राजकीय, शैक्षणिक, आर्थिक घडामोडींच्या आधारे वाङ्मयीन प्रेरणांचा परिचय करुन देणे.
		CO 2 या कालखंडातील प्रमुख साहित्य प्रकारातील (कथा, कांदबरी, नाट्य, चरित्र, आत्मचरित्र) स्थित्यंतराचे व वाङम्यीन प्रवाहाचे ज्ञान देणे.

T.Y.B. A. G.3	आधुनिक मराठी साहित्य आणि व्यावहारिक व उपयोजित मराठी	CO 1 आधुनिक मराठी साहित्यकृतीच्या साहित्य परंपरेचा स्थूल परिचय करुन देणे.
		CO 2 नेमलेल्या मराठी साहित्यकृतीच्या साहित्य परंपरेचा स्थूल परिचय करुन देणे.
		CO 3 ग्रंथपरीक्षणासाठी वाचन व लेखन क्षमता वाढविणे.
T.Y.B. A. S3	साहित्यविचार	CO 1 साहित्याचे स्वरुप व वैशिष्ट्ये यांच्या आधारे साहित्य विषयक विचार करण्याची क्षमता विकसित करणे.
		CO 2 साहित्य प्रयोजने, साहित्य निर्मिती प्रक्रिया, साहित्य आस्वाद व साहित्य अभिरुची घडविणे.
		CO 3 समाज व साहित्याचा परस्परसंबंध साहित्य आस्वाद व साहित्य अभिरुची घडविणे.
T.Y.B. A. S4	भाषाविज्ञान- वर्णनात्मक आणि ऐतिहासिक	CO 1 भाषेचे स्वरुप, भाषेचे अभ्यासाचे महत्त्व व प्रमुख अंगे जाणून घेणे.
		CO 2 वेगवेगळ्या भाषाभ्यास पद्धतीचे वेगळेपण व महत्त्व जाणून घेणे.
		CO 3 भाषेचे मानवी जीवनातील कार्य व महत्त्व पटवून देणे.
F.Y.B. COM	यशोगाथापाठ्यपुस्तक व व्यावहारिक मराठी	CO 1 विविध क्षेत्रातील मराठी भाषा व्यवहार विषयक जाणीव घडविणे.
		CO 2 विविध क्षेत्रातील दिग्जांचा जीवन प्रवास लक्षात आणून देणे.
		CO 3 प्रशासकीय मराठी, प्रसारमाध्यमांसंबंधीचे मराठी भाषा लेखन कौशल्यांची क्षमता वाढविणे.
S. Y. B. SC	मराठी विज्ञानसाहित्य आणि व्यावहारिक मराठी	CO 1 विद्यार्थ्यांमध्ये मराठी विज्ञान साहित्या विषयी आवड निर्माण करणे.
		CO 2 प्रसारमाध्यमे व भाषिक कौशल्याचे यांच्या परस्पर संबंधाचे ज्ञान विद्यार्थ्यांना करुन देणे.
		CO 3 विद्यार्थ्यांमध्ये लेखन, वाचन व आकलन विकसित करणे.

Department of Hindi		
F.Y.B.A.(Annual)	Hindi Samanya -1 [General -1]	1 छात्रों को हिंदी गद्य और पद्य साहित्य एवं साहित्यकारों से परिचित कराना ।
		2 छात्रों को जीवन मूल्यों से परिचित कराना एवं उन्हें अपनाने की प्रेरणा देना ।
		3 छात्रों का मानसिक विकास करना एवं प्रशासनिक पारिभाषिक शब्दावली से अवगत कराना ।
		4 छात्रों की विचार क्षमता एवं कल्पना को बढावा देना ।
		5 छात्रों को आवेदन पत्र लेखन की जानकारी प्रदान करना ।
SYBA	Hindi Samanya-2 [General- 2]	1 छात्रों को कहानीकारों एवं उनकी कहानियों से परिचित कराना ।
		2 छात्रों को नई कविता एवं कवियों से परिचित कराना ।
		3छात्रों को नैतिक मूल्यों की जानकारी एवं राष्ट्रनिर्माण की प्रेरणा प्रदान करना ।
		4 छात्रों को रोजगार प्राप्ति हेतु विज्ञापन लेखन, वृतांत लेखन, साक्षात्कार लेना आदि की जानकारी देना।
		5 भाषिक गलतियों और प्रशासनिक एवं रेल से संबंधित शब्दावली से परिचित कराना।
	Hindi Vishes -1 [Spl- 1]	1 छात्रों को हिंदी भाषा की उत्पत्ति एवं उसके विकास की जानकारी देना ।
		2 हिंदी की बोलियों, शब्द भंडार तथा लिपि आदि से परिचित कराना।
		3 हिंदी वर्तनी के नियमों एवं मानक हिंदी से परिचित कराना ।
		4 ध्वनिविज्ञान, पदविज्ञान , वाक्य विज्ञान, अर्थ विज्ञान आदि की सूक्ष्म जानकारी देना ।
		5 राजभाषा एवं राष्ट्रभाषा हिंदी का परिचय देना।
	Hindi Vishes -2 [Spl- 2]	1 छात्रों को हिंदी उपन्यास, नाटक एवं मध्ययुगीन काव्य से परिचित कराना ।
		2 हिंदी उपन्यास एवं नाटक की समीक्षा करने की जानकारी प्रदान करना।
		3 छात्रों को हिंदी मध्ययुगीन कवियों एवं उनके दोहों तथा पदों से परिचित करके मूल्य वर्धन करना।
		4 आधुनिक हिंदी काव्य की सूक्ष्म जानकारी देना ।
		5 राजभाषा एवं राष्ट्रभाषा हिंदी साहित्य की बारिकियों का ज्ञान बढाना।
TYBA	Hindi Samanya -3 [General- 3]	1 छात्रों को हिंदी आत्मकथा, दीर्घ कविता और काव्य नाटक से परिचित कराना।
		2 छात्रों को कार्यालयीन हिंदी से परिचित कराना ।
		3 हिंदी आत्मकथा एवं काव्यनाटक के माध्यम से छात्रों में जीवनमूल्यों को जागृत करना।
		4 कार्यक्रम संयोजन के माध्यम से छात्रों को रोजगार प्राप्ति के लिए तैयार करना।
		5 समाचार पत्र लेखन, रेडियो लेखन, सरकारी पत्रलेखन के माध्यम से छात्रों को परिचित कराना।
	Hindi Vishes -3 [SPl- 3]	1 छात्रों को हिंदी साहित्य के इतिहास की जानकारी देना।
		2 छात्रों आदिकाल, भक्तिकाल एवं रीतिकाल का परिचय देकर युगीन रचनाकारों की जानकारी देना।
		3 हिंदी आत्मकथा एवं काव्यनाटक के माध्यम से छात्रों में जीवनमूल्यों को जागृत करना।
		4 हिंदी आधुनिक काव्य से छात्रों को परिचित कराना ।
		5 हिंदी गदय विधाओं का विकासात्मक संक्षिप्त परिचय देना।
	Hindi Vishes -4 [SPl- 4]	1 छात्रों को काव्य, साहित्य की परिभाषाओं, काव्य हेतु , काव्य प्रयोजन से परिचित कराना।
		2 छात्रों को अलंकार काव्य के तत्व, शब्दशक्ति, काव्य भेदों की जानकारी प्रदान करना।
		3 गदय के भेदों, दृश्यकाव्य के भेदों की जानकारी प्रदान करना।
		4 रस की परिभाषा एवं स्वरुप तथा रस के विविध अंगों और रसों का सोदाहरण परिचय देना।
		5 हिंदी आलोचना एवं छंदों की जानकारी प्रदान करना।
FYBCOM	Vaikalpik Hindi	1 छात्रों को गद्य एवं पद्य का परिचय देना।
		2 छात्रों को हिंदी की विविध विधाओं की जानकारी देना।
		3 छात्रों में सामाजिक प्रतिबद्धता एवं राष्ट्रप्रेम की जागृति पैदा करना।
		4 व्यावसायिक पत्रों की जानकारी देकर छात्रों को व्यवसायों की और आकर्षित करना।
		5 बैंक में प्रयोग में लाए जानेवाले पत्रों एवं आवेदनों की जानकारी देना।

Department of Political Science		
F.Y.B.A. (Annual)	Indian govt. and Politics paper G-1	CO1. Students can learn detail on the political processes and the actual functioning both constitutional and Administrative.
		CO2. Students can learn about the Indian Constitution and the government system based on it.
		CO3. It emphasizes on local influences that derive from social stratification of castes and jatis, from language, religion, ethic and economic determinants and critically assesses its impact on the political processes.

		CO4. Learning of background of our constitution federal system structure of our state and central govt. party system and election process
		CO5. Students can be made aware of the basic rights and duties of the Constitution of India.
S.Y.B.A. (Annual)	Political Theory and concepts Paper-G-2	CO1.This is an introductory paper to the concepts, ideas and theories in political theory. It seeks to explain the evolution and usage of these concepts, ideas and theories with reference to individual thinkers both historically and analytically.
		CO2. Students can learn in detail the concept of Democracy, globalization, Sovereignty, state , liberty, justice, power and Authority
		CO3. The different ideological standpoints with regard to various concepts and theories are to be critically explained with the purpose of highlighting the differences in their perspectives and in order to understand their continuity and change.
		CO4. It is need of students to emphasize the continuing relevance of these concepts today and explain how an idea and theory of yesteryears gains prominence in contemporary political theory.
	Western Political Thoughts-S1	CO1. From this paper students can studies the classical tradition in political theory from Plato to Marx with the view to understand how the great Masters explained and analyzed political events and problems of their time and prescribed solutions.
		CO2. The texts are to be interpreted both in the historical and philosophical perspectives to understand the universality of the enterprise of political theorizing.
		CO3. The limitations of the classical tradition, namely its neglect of women's concerns and issues and the non-European world are critically examined.
		CO4. The legacy of the thinkers is explained with the view to establish the continuity and change within the Western political tradition.
	Political Sociology- S2	CO1. Students can study new ideas prepared by social and political interactions such as Political Culture, Political Socialization, Political Ideology, Political Participation, Legitimacy and Influence, Political Change, Political Development.
		CO2. Political sociology is concerned with the social basis of power in all institutional sectors of society. In this tradition, political sociology deals with patterns of social stratification and their consequences in organized politics.
		CO3. Students will learn basic principles of political theory and various types of Political culture of different country.
		CO4. It is one particular approach to the study of social organization and social change.
		CO5. Students will learn thoughts of Karl Marx, Max Weber and Behaviorism approach which is impacted on political and social interaction.
T.Y.B.A. (Annual)	Political Ideology -G-3	CO1. This paper studies the role of different political ideologies and their impact in politics. Each ideology is critically studied in its historical context.
		CO2. In course of its evolution and development, the different streams and subtle nuances within each ideology, the changes and continuities in its doctrine and its relevance to contemporary times are highlighted.
		CO3. The close link between an idea and its actual realization in public policy needs to be explained as well.
		CO4. Knowledge about various ideologies like nationalism, Democratic Socialism fascism, Marxism, Gandhism, Phule-Ambekarism ,Feminism .
		CO5.The philosophical basis of the ideologies is emphasized with special emphasis on key thinkers and their theoretical formulations. The legacy of all the major ideologies is to be critically assessed.
	Public Administration -S3	CO1. This paper is an introductory course in public Administration. The essence of Public Administration lies in its effectiveness in translating the governing philosophy into programmes, policies and activities and making it a part of community living.
		CO2. The paper covers personnel public administration in its historical context thereby proceeding to highlight several of its categories, which have developed administrative salience and capabilities to deal with the process of change.
		CO3. The recent developments and particularly the emergence of New Public Administrations are incorporated within the larger paradigm of democratic legitimacy.
		CO4. Students learn about budgetary processes, administrative system, concept of good Governance and Approaches to Public Administration.
		CO5. The importance of legislative and judicial control over administration is also highlighted.
	International Politics-S-4	CO1. This paper deals with concepts and dimensions of international relations and makes an analysis of different theories highlighting the major debates and differences within the different theoretical paradigms.

Department of Education		
F.Y.B.A.	Education Gen 1	CO1. From this paper students understand the role of education in national development.
		CO2. Students understand various agencies of education
		CO3. Students acquaint with the meaning, concept and characteristics of the process of Education
S.Y.B.A.	Education Gen 2	CO1. Students understand the role and function of school in the development of a child

		CO2. Understanding the importance of heredity and environment in education.
		CO3. Become aware of the meaning, concept and problems of secondary education in India
		CO4. understand the process of learning, remembrance and forgetting and the factors affecting these processes and their educational implication.
T.Y.B.A.	Education Gen3	CO1. Get Exposed to the meaning, concept, and problems of higher education in India
		CO2. Become able him/her to understand the importance of different mental process
		CO3. understand concept, need and importance of ICT and its application in education

Department of Psychology		
F.Y.B.A (Annual)	General Psychology Paper G:I	CO1.Development of Social and Personality, Clinical and Counseling.
		CO2.To help students to understand the relations of biological and psychological aspects of behavior.
		CO3.To acquaint students with some important application areas of psychology.
F.Y.B Sc.	General Psychology Paper I	CO1.To provides solid foundation for the basic principles of psychology.
		CO2. To familiarize students with the historical trends in psychology.
		CO3. To provide an overview of applications of psychology.
S.Y.B.A. (Annual)	Psychology General Paper-II(G2)	CO 1.Acquaint Students with basic concepts, theories and applications of Social Psychology.
		CO 2.Familiarize students with group behavior.
		CO 3.Underline the importance of close Relationships and Pro-social behavior.
	Special Psychology Paper I	CO 1. Introduction of Abnormal Psychology.
		CO 2. To acquaint students with the recent classification of abnormality
		CO3. To help students to acquir the Knowledge about the causes,symptoms and treatments of various types of psychological disorders.
	Special psychology Paper II	CO 1. Introduction of Developmental Psychology.
		CO 2.To acquaints the students with the basic concepts of human development processes.
		CO 3.Development to Beginning of Life.
		CO 4.Knowledge of Phsical Development and Maturity.
T.Y.B.A. (Annual)	Psychology General Paper-III(G3)	CO 1.The emergence of Industrial and Organizational Psychology.
		CO 2The work done in Industrial and Organizational Psychology.
		CO 3.The significance of training, performance appraisal,leadership models .
		CO 4.The importance of Engineering Psychology.
		CO5. Knowledge of the Personnel Selection and Training.
	Special Psychology Paper III(S3)	CO1.Scientifice Research and Experimental Psychology.
		CO2. To develop the spirit of scientific inquiry in the students.
		CO.3. Knowledge of the Research Project.
		CO.4.Introduction to the Experimental psychology and research methodology.
	Special Psychology Paper IV	CO.1.Psychology Practical: Tests and Experiments
		CO.2.To Familiarize the students with use of elementary statistical techniques.
		CO.3. to acquaint the students with the basic procedure and design of psychology experiments
		CO.4.To encourage and guide the students to undertake asmall-scale research project.
		CO5.To encourages students to learn practical application through study tour and visit.

Department of Economics		
F.Y.B.A. (Gen.)	Indian Economy Prospects and Problems (G1)	Students can describe and compare Indian economy and developed economics
		Analyze Indian Agricultural, Industrial & service sector of various aspects.
		Students can understand various aspects of Indian planning system.
		To create awareness among the students of Indian economic policy and challenges.
S.Y.B.A.	Micro Economics (S 1)	In this paper student is expected to understand the behavior of an economic agent, namely a consumer, a producer, a factor owner and the price fluctuation in a market.
		Student can understand the nature and scope of micro economics, the theory of consumer behavior and analysis of production function.
		Student can understand the price formation in different markets structures and the equilibrium of a firm and industry.
S.Y.B.A.	Macro Economics (S 2)	The paper entitled macro economics is designed to make an undergraduate student aware of the basic theoretical framework underlying field of macro economics.
		Student can understand various concept of National income, Theory's of Employment, concept of Inflation, Deflation, Business cycles and Macro economics objectives and policies.
S.Y.B.A. GEN.	Modern Banking (G 2)	To create the awareness among the students of modern banking system.
		Student can understand various concept of modern banking system like Net Banking, Mobile banking, RTGS, Tele banking etc.
		Student can understand function of commercial banks, principles of commercial banks, Reserve banks functions and its policy's and co-operative banking of India.
T.Y.B.A.	International Economics (S 3)	In this paper provides the students deep knowledge about the basic principles of International Economics
		To study the theories of International trade

		To understand and highlight the trends and challenges faced by nations in a challenging global environment.
		To understand the trends in India's external sector.
T.Y.B.A.	Public Finance (S 4)	Student can understand meaning, nature and scope of public finance.
		Enable students to identify causes of increase in public expenditure & effects of public expenditure.
		Students can analyze Indian Tax structure.
		Student can understand the union budget and also state budget.
T.Y.B.A.GEN.	Economic Development and Planning (G 3)	In this paper student is expected to understand indicators of economic development and growth.
		Student can study and understand various development theories and development approaches.
		Student can understand concept of Developed and Developing countries, constraints on development process and economic planning.
		Student can understand concept of Developed and Developing countries, constraints on development process and economic planning.
		Student can understand foreign capital concept and its role of Economic development.
F.Y.B.COM.	Business Economics (Micro)	To expose students of commerce to basic Micro economics.
		To stimulate the student interest by showing the relevance and use of various economic theories.
		To apply economic reasoning to problems of business.
S.Y.B.COM.	Business Economics (Macro)	Student can understand Basic concepts of Macro Economics.
		Student can understand various concept of National Income, Measurement and difficulties of National Income.
		Student can understand and study concept of money, value of Money, RBI, Inflation, Deflation, and Trade cycle.
		Student can study value of Money theories and theories of output and employment.
T.Y.B.COM.	International Economics	In this paper provides the students deep knowledge about the basic principles of International Economics.
		To study the theories of International trade.
		To understand and highlight the trends and challenges faced by Nations in a challenging global environment.
		To understand the trends in India's external sector.

Department of History		
F.Y.B.A. (Annual)	CHH. SHIVAJI AND HIS TIMES (1630 - 1707) (G-I)	CO.1. Enable the students to understand the study of History of Maratha to make it value based, conceptual and thought provocative.
		CO.2. Introduction to the International elements in the study of Marathas to facilitate comparative analysis of this history.
		CO.3. Highlighting the importance of past in exploration of present context. Understanding of the Socio –economic, cultural and political background of 17th century Maharashtra.
		CO.4. Development of spirit of healthy Nationalism & Secularism among the student.
		CO.5. Encouragement of students to for competitive examinations.
S.Y.B.A. (Annual)	MODERN INDIA (1850-1950) (G-II)	CO.1. Enable students to understand the History of freedom movement of India, aims, objectives problems and progress of Independent India.
		CO.2.Enabling the student to understand the processes of rise of modern India.
		CO.3.Knowledge of the basic concepts/ concerns/ frame work of Indian History.
	ANCIENT INDIA (3000 BC - 1206 AD) (S-I)	CO.1. Enable students to understand the social, economic, religious and institutional bases of Ancient India.
		CO.2. Students can understand agricultural concepts.
		CO.3. Students can understand industry, trade.
		CO.4. Development of the concept of Nation- State background of political history. And ancient Indian Art & Architecture.
	MEDIEVAL INDIA (1206 - 1707) (S-II)	CO.1 students can understand the sources of History of medieval India.
		CO.2. The course intends to provide an understanding of the social, economic, religious bases of medieval India.
		CO.3. Knowledge medieval Indian art & architecture.
T.Y.B.A. (Annual)	HISTORY OF THE WORLD IN 20TH CENTURY (1914 - 1992) (G-III)	CO.1. Enable students to understand Modern World, acquaint the student with the Socio-economic & Political developments in other countries. And understand the contemporary world
		CO.2. Orientation of the students with political history of Modern World.
		CO.3. Knowledge about the main developments in the Contemporary World
		CO.4. Impart knowledge about world concepts.
		CO.5. Understanding of the economic transition in World during the 20th Century.
		CO.6. Become aware of the principles, forces, processes and problems of the recent times.
		CO.7. Knowledge regarding growth of various political movements that shaped the modern world.
		CO. 8. Highlighting the rise and growth of nationalism as a movement in different parts of the world.
	INTRODUCTION TO HISTORY (S-III)	CO.1. Orientation of the students about how history is studied, written and understood.
		CO.2. Explanation of methods and tools of data collection.
		CO. 3.Understanding the meaning of Evolution of Historiography.
		CO.4. Knowledge of Various Views of Historiography
		CO.5. Knowledge of the approaches to Historiography

		CO.6. Knowledge of the types of Indian Historiography
		CO.7. Ability to describe importance of inter-disciplinary research.
		CO.8. Introduction of the basics of research.
		CO.9. Knowledge of the recent research in History.
		CO.10. Learn how to use sources in their presentation.
	HISTORY OF ASIA IN 20TH CENTURY (1914– 1992) (S-IV)	CO.1. Orienting the students with political history of Asia.
		CO.2. Enabling the students to understand the economic transition in Asia during 20th Centuries.
		CO.3. Understanding the important developments in the 20th century Asia in a Thematic approach.
		CO.4. Providing an overall view and broad perspective different movements connected with Nationalist aspirations in the region of Asia in general.
		CO.5. Empowering the students to cope with the challenges of globalization.

Department of Geography		
F.Y.B.A.	(G-1) Gg-110 Elements of Geomorphology	CO 1. To understands the students to the basic concepts in Geomorphology.
		CO 2. To aware latest concept in Geomorphology
		CO 3. To understands the students with the utility and application of Geomorphology in different regions and environment.
		CO 4. To make the students aware of the need of protection and conservation of different landforms.
S.Y.B.A	(G2) Gg 210: Elements of Climatology and Oceanography	CO 1. To understands the students basic principles and concepts in Climatology and Oceanography.
		CO 2. To understands the students with the applications of Climatology and Oceanography in different areas and environment.
		CO 3. To make the students aware of the Planet Earth and thereby to enrich the student's knowledge.
	OR	
	(G2) Gg-210 Geography of Disaster Management	CO 1 To understand students the concept of disaster & its relation with Geography.
		CO 2 To aware the students with the utility & application of hazards in different areas & its management.
		CO 3 To make the students aware of the need of protection & disaster management.
	(S-1) Gg-220 Economic Geography	CO 1. To understands the students to the basic principles and concepts in Economic Geography
		CO 2. To aware the students with the applications of Economic Geography in different areas and development.
		CO 3. To integrate the various factors of economic development and to understands the students about this dynamic aspect of economic geography.
	OR	
	(S-1)Gg- 220 : Tourism Geography	CO 1) To understands the student's basic concepts of Geography & Tourism
		CO 2) To aware the students with the utility and application of Tourism
		CO 3) To understand the students & society to the interrelationship between tourism and employment generation opportunities.
		CO 4) To understand the impact of tourism on Physical and Human Environments.
	(S-1) Gg-201 : Fundamentals of Geographical Analysis	CO 1. To enable the students to use various Projections and Cartographic Techniques.
		CO 2. To understands the students with basic of Statistical data.
		CO 3. To aware the students with the principles of surveying, its importance and utility in the geographical study.
T.Y.B.A.	G-3 Gg. 310:Human Geography	CO 1. To understands the students with the nature of man-environment relationship and human capability.
		CO 2. To understands adopt and modify the environment under its varied conditions from primitive life style to the modern living.
		CO 3. To identify and understand environment and population in terms of their quality and spatial distribution pattern.
		CO 4. To comprehend the contemporary issues facing the global community.
	OR	
	(G-3) Gg.: 310 Regional Geography of India	CO 1. To understands the students with geography of our Nation.
		CO 2. To make the student aware of the magnitude of problems and Prospects at National level.
		CO 3. To understand the students inter relationship between the subject and the society.
		CO 4. To understand the students the recent trends in regional studies.
	(S-3) Gg-320 – Agricultural Geography	CO 1. To aware the students about Agricultural activities and its relation with Geography.
		CO 2. To Familiarize the students with new modern technical methods and their applications in Agricultural
		CO 3. To enable students to apply Previously knowledge in Problems and Prospects in agriculture activities.
	OR	
	(S-3)Gg-320: Population and Settlement Geography	CO 1. To understanding of spatial and structural dimensions of population
		CO 2. To familiarizing the students with global and regional level problems.

		CO 3. To understand the students with the spatial, political and structural characteristics of human settlement under varied environmental conditions.
	(S-4) Gg. 301: Techniques of Spatial Analysis	CO 1. To understands the Students with SOI Toposheets and to acquire the Knowledge of Toposheet Reading/ Interpretation.
		CO 2. To familiarize the students with the weather instruments and their applications in Geographical phenomena.
		CO 3. To understands the students with IMD weather maps and to gain the knowledge of weather map Reading / interpretation.
		CO 4. To train the students in elementary statistics as an essential part of geography.
		CO 5. To awareness about GIS among the students.

Course Outcomes (Cos) of Bachelor of Commerce (B.Com.)		
Department of Commerce		
F.Y.B.Com. (Annual)	Financial Accounting (102)	CO1. Imparting the knowledge of various accounting concepts
		CO2.Knowledge about accounting procedures, methods and techniques.
	Business Mathematics and Statistics (104 -A)	CO1.Understanding the concept of shares and to calculate Dividend
		CO2.Understanding the concept of population and sample.
		CO3.Development of skill to use frequency distribution to make decision.
		CO4. Understanding and calculation of various types of averages and variations.
		CO6.Solving the LPP to maximize the profit and to minimize the cost.
		CO7.Usage of correlation and regression analysis to estimate the relationship between two variables.
		CO8. Understanding the concept and techniques of different types of index numbers.
	Organizational Skill Development. (Paper -105 -a)	CO2.Orientation of the students towards the concept of Organization and Modern Office.
		CO2.Knowledge and role of and Functions of Office Manager.
		CO3.Knowledge of the functioning of Modern office appliances equipments and e- format
	Marketing & Salesmanship (106 -c)	CO1.Awareness about market and marketing.
		CO2.Establishment of link between commerce/Business and marketing.
		CO3.Understanding of the basic concept of marketing
		CO4.Understanding and marketing philosophy and generating ideas for marketing research.
		CO5.Knlowledge about the relevance of marketing in modern competitive world.
		CO6.Development of an analytical ability to plan for various marketing strategy.
	Insurance and Transport	CO1. To acauaint student with the Insurance and Transport
	Banking and Finance	CO1. To enrich students with the knowledge of the functioning banks
	Co-operation and Rural Development	CO1. To make the students built their career in the field
	Consumer Protection & Business Ethics	CO1. To make the students aware about laws relating to customers
	Foundation Course in Commerce	CO 1. To understand the basics forms of organization
	Business Environment & Entrepreneurship (106-e)	CO1.Awareness about the Business Environment.
		CO2.Creation of entrepreneurial awareness among students,
		CO3. Motivation of making their mind set for taking up entrepreneurship as career.
S.Y.B.Com. (Annual)	Business Communication -201	CO1.Understanding of the concept, process and importance of communication.
		CO2.Provision of knowledge of various media of communication.
		CO3. Development of business communication skills through the application and exercises
	Corporate Accounting (-202)	CO1.Awareness about the conceptual aspect of corporate accounting
		CO2.Enabling the students to develop skills for Computerized Accounting
	Business Management (204)	CO1.Provision of knowledge & understanding about business management concept.
	Elements of Company Law (205)	CO1.Imparting the students with the knowledge of fundamentals of Company Law.
		CO2. Knowledge of new concepts involving in company law regime.
		CO3.Awareness to students with the duties and responsibilities of Key Managerial Personnel.
		CO4. Imparting students the provisions and procedures under company law.
	Cost and Works Accounting – I	CO1. To impart the knowledge of cost concept
	Marketing Management –(I) (-206-h)	CO1. Orientation of the students with recent trends in marketing management
		CO2.Awareness about marketing of eco friendly products in the society through students
		CO3. Knowledge and the use of E-Commerce in competitive environment
		CO4.Understanding the influences of marketing management on
	Banking and Finance – I	CO1. To create the awareness among the students of the Indian banking system
T.Y.B.Com. (Annual)	Business Regulatory Framework	CO1.Development and the awareness among the students regarding these laws affecting business, trade and commerce.
	(Mercantile Law) (301)	CO 1To acquaints students with the basic concept of mercantile laws
	Advanced Accounting (302)	CO1. Imparting the knowledge of various accounting concepts
		CO2. Knnowledge about accounting procedures, methods and techniques.
		CO3.Development of practical approach to accounts writing by using software
	Auditing & Taxation (Paper -304)	CO1.Knowledge about preparation of Audit report.
		CO2.Assurance Standards, Tax Audit, and Audit of computerized Systems.
		CO3.Knowledge about the concept and principles of Auditing, Audit process,

	Marketing Management. .(Paper-II)	CO1.Understanding of the concept and functioning of marketing planning and sales management
	(Course Code 305 -h)	CO2.Knowledge of marketing strategies and organization
		CO3.Information of various facets of marketing with regulatory aspects
	Banking and Finance - II	CO 1 To acquaints students with the financial market
	Cost and Works Accounting - II	CO1. Imparting knowledge about the concept and principles of application of overheads.
		CO2. Understanding various methods of costing and their applications.
	Marketing Management(Paper-III) (h)	CO1.Understanding the role Brand and Distribution Management in marketing
		CO2.Information about Marketing and Economic Development
		CO3.Knowledge and the importance of control on marketing activities
	Banking and Finance - III	CO 1 To make the students aware of the banking law
	Cost and Works Accounting - III	CO1. Imparting knowledge regarding costing techniques
		CO2. In calculate the knowledge about Legal provisions of cost audit.

BBA(CA)		
Semester I	Principles of Programming and Algorithms (101) Paper I	CO 1. Understanding about how to write algorithms and design flowchart for Programming purpose. To built up Programming
	Modern Office Environment & Office Automation (101) Paper II	CO 1. Identification of software 's, Hardware devices, Making Excel Sheet, Power point Presentations
	Prin. of Management (102) (103) Paper III	CO 1. Developing, Organizing and Management Skill with the help of various theories.
	Financial Accounting (104) Paper IV	CO 1. Developing accounting systems of various organization
	Business Communication Paper V (105)	CO 1. Implementing effective business writing, skills that maximize team effectiveness Understand concept of accounting through Tally.
Semester II	Procedure Oriented Programming Using 'C' Language (201) Paper I	CO1. Understanding and Improvement of the programming logic. It is helpful to develop System Software.
	Database Management System Paper II	CO1. Maintenance, proper handling, creation, firing queres to the database with mapping
	Organizational Behavior (203) Paper III	CO1. Developing behavior at workplace
	Computer Application in Statistics (Paper IV 204)	CO1. Use of statistical concepts in Computers
	E-Commerce Concepts (205) Paper V	CO1. Knowledge of E-commerce about a transaction of buying or selling online. Electronic commerce draws on technologies such as transfer, supply.
	Lab course – II Practical Paper VI (206)	CO1. Improvement in Programming & Development Skills
Semester III	Relational Database Management System (301) Paper I	CO1. Understanding about how to use database as backend in software Development
	Data Structure using 'C' (302) Paper II	CO1. Developing, Organizing and Storing the data, Data Analysts
	Introduction to Operating System (303) Paper III	CO1. Knowledge of operating system concepts.
		CO2. Skill to operate the different operating systems.
		CO3. Study of management of all resources in the O.S.
	Business Mathematics (304) Paper IV	CO1. Usage of Mathematical concepts in Computers
	Software Engineering (305) Paper V	CO1. Knowledge of Software tools, methods, types, phases ,quality metrics Designing, Maintaining, Implementing, Testing Software Products
	Lab Course-Practical (306) Paper VI	CO1. Developing Desktop Application software's, Logical and Analytical Skills,
Semester IV	Object Oriented Programming Using C++ (401) Paper I	CO1. Developing System Software's
	Programming Using Visual Basic (402) Paper II	CO1. Understanding about how to use VB as frontend in software Development
	Computer Networking (403) Paper III	CO1. Awareness about Computer. User understands how to access remote programs and remote databases either of the same organization or from other enterprises or public sources.
	Enterprise Resource Planning (404) Paper IV	CO1. Knowledge of ERP.
	Human Resource Management (405) Paper V	CO1. Development and implementation of employee training, development programme and understanding process of Recruitment, selection.
	Lab Course-Practical (406) Paper VI	CO1. Development of Desktop Application software's, Logical and Analytical Problem Solving Skills
Semester V	Java Programming (501) Paper I	CO1. Development System Software's
	Web Technology (502) Paper II	CO1. Knowledge of the Programming in JavaScript, VBScript and html syntaxes, methods for web application development
	Dot NET Programming (503) Paper III	CO1. It is helpful to students that how to develop Desktop Application.
	Object Oriented Software Engineering (504) Paper IV	CO1. Designing, Maintaining, Implementing, Testing Software Products
	Lab Course-Project Practical (505) Paper V	CO1. Project learning, also known as project-based learning, is a dynamic approach teaching in which students explore real-world problems and challenges, simultaneously developing cross-curriculum skills while working in small collaborative groups

	Lab Course-Project Practical (506) Paper VI	CO1. Developing Desktop Application software's, Logical and Analytical Skills, Problem Solving Skills
Semester VI	Advanced Web Technology (601) Paper I	CO1. Developing Web Applications, Mobile Application.
	Advanced Java (602) Paper II	CO1. Design & Developing Web Application software, Mobile Application.
	Recent Trends in IT (603) Paper III	CO1.Understanding of current trends in Software industries and Corporate sectors.
	Software Testing (604) Paper IV	CO1.Testing of a developed Software.
	Lab Course-Project Practical (605) Paper V	CO1. Project learning, also known as project-based learning, is a dynamic approach to teaching in which students explore real-world problems and challenges, simultaneously developing cross-curriculum skills while working in small collaborative groups.
	Lab Course-Project Practical (606) Paper VI	CO1. Developing the Desktop Application software's, Logical and Analytical Skills, Problem Solving Skills.

Department of Bachelor of Business Administration (BBA)		
Semester I	(101) Business Organization and Systems	CO 1. Make the students aware about various activities of business, business practices and recent trends in business world.
		CO 2. Develop the spirit of entrepreneurship among the students.
	(102) Business Communication Skills	CO 1. Improve various skills such as linguistic, non linguistic and Paralinguistic skills.
		CO 2. Create awareness among student about Methods and Media of communication.
	(103) Business Accounting	CO 1. Impart basic accounting knowledge
		CO 2. Impart the knowledge about recording of transactions and preparation of final accounts
	(104) Business Economics (Micro)	CO 1. Expose students to basic micro economic concepts.
		CO 2. Apply economic analysis in the formulation of business policies.
	(105) Business Mathematics	CO 1. Understand applications of matrices in business.
		CO 2. Understand the concept of shares & share market.
	(106) Business Demography and Environmental Studies	CO 1. Develop knowledge base for demographic and environmental factors affecting business.
		CO 2. Inculcate values of Environmental ethics amongst the students.
Semester II	(201) Principles of Management	CO 1. Give historical perspective of management
		CO 2. Students will also gain some basic knowledge on recent trends and international aspects
	(202) Principles of Marketing	CO 1. Introduce and familiarize the student's basic concepts of marketing, it's general nature, scope and importance
		CO 2. Develop basic and essential skills related to marketing.
	(203) PRINCIPLES OF FINANCE	CO 1. Provide understanding of nature, importance, structure of finance related areas.
		CO 2. Impart knowledge regarding sources of finance for a business.
	(204) Basics of Cost Accounting	CO 1. Impart the Knowledge of Basic cost concepts, element of cost & preparation of Cost Sheet.
		CO 2. Provide basic knowledge of important Methods of costing.
	(205) Business Statistics	CO 1. Understand the concept - Time Series and its applications in business.
		CO 2. Understand the concept - Index numbers and applications in business.
	(206) Business Informatics	CO 1. Know the basics of Computer
		CO 2. Understand the basics of networking
Semester III	(301) Personality Development	CO 1. Make the students aware about the dimensions and importance of effective personality.
		CO 2. Make the students aware about the various dynamics of personality development.
	(302) Business Ethics	CO 1. Impart knowledge of Business Ethics to the students.
		CO 2. Promote Ethical Practices in the Business..
	(303) Human Resource Management and Organizational Behavior	CO 1. Introduce to the students the functional department of human resource management and acquaint them with planning, its different functions in an organization.
		CO 2. Introduce the human resource processes that are concerned with planning, motivating and developing suitable employees for the benefit of the organization.
	(304) Management Accounting	CO 1. Impart basic knowledge of Management Accounting.
		CO 2. Know the implications of various financial ratios in decision making.
	(305) Business Economics (Macro)	CO 1. Study the behavior of working of the economy as a whole.
		CO 2. Apply economic reasoning to problems of business and public policy.
	(306) IT in Management	CO 1. Understand the role of IT in Management.
		CO 2. Understand the basics of operating systems.
Semester IV	(401) Production & Operations Management	CO 1. Provide goods and services at the right time, at the right place at the right manufacturing cost of the right qualit
		CO 2. Identify the role of operation function.
	(402) :Industrial Relations and Labour Law	CO 1. Impart the students with the knowledge about complexities between labour and management relationships.
		CO 2. Make the students aware about mechanisms of Industrial Dispute and friendly interventions to deal with employee-employer problems.
	(403) Business Taxation	CO 1. Understand the basic concepts and definitions under the Income Tax Act, 1961.
		CO 2. Update the students with latest development in the subject of taxation.
	(404) International Business	CO 1. Acquaint the students with emerging issues in international business.
		CO 2. Understand the importance of foreign trade for Indian economy.
	(405) Management Information System	CO 1. Understand the concepts of Information System
		CO 2. Study the concepts of system analysis and design
	(406) Business Exposure	CO 1. Develop the understanding of the student with a realistic and practical perception of the industry its layout, procedures, processes, organization structure
Semester V	(501) Supply Chain and Logistics	CO 1. Introduce the fundamental concepts in Materials and Logistics Management.

	Management	CO 2. Familiarize with the issues in core functions in materials and logistics management
	(502) Entrepreneurship Development	CO 1. Create entrepreneurial awareness among the students.
		CO 2. Help students to up bring out their own business plan.
	(503) Business Law	CO 1. Understand basic legal terms and concepts used in law pertaining to business
		CO 2. Comprehend applicability of legal principles to situations in Business world by referring to few decided leading cases.
	(504) Research Methodology	CO 1. Provide the students with basic understanding of research process and tools for the same.
		CO 2. Provide an understanding of the tools and techniques necessary for research and report writing.
	(505)Analysis of Financial Statements	CO 1. Make the student well acquainted with current financial practices
		CO 2. Understand the concept of financial statements as part of their professional responsibilities.
	(506) Long Term Finance	CO 1. Make the study of long-term financing
		CO 2. Make the student well-acquainted regarding current financial structure
Semester VI	(601) Business Planning and Project Management	CO 1. Acquaint the students with the planning process in business and familiarize them with the function and techniques of project management
	(602) Event Management	CO 1. Acquaint the students with concepts, issues and various aspects of event management
	(603) Management Control System	CO 1. Introduce to the students the function of management control, its nature, functional areas, and techniques.
	(604) E- Commerce	CO 1. Know the concept of electronic commerce
		CO 2. Know the concept of Cyber Law & Cyber Jurisprudence
	(605) Financial Services	CO 1. Study in detail various financial services in India
		CO 2. Make the students well acquainted regarding financial markets
	(606) Cases in Finance/ Project	CO 1. Know the basics of concept of Problems Solving and Case Study

Course Outcomes (Cos) of Bachelor of Science (B.Sc.)		
Department of Chemistry		
F.Y.B.Sc. Annual	Physical and Inorganic Chemistry Paper: I	CO1. Knowledge of the various properties of states of matters.
		CO2.Understanding of the dynamic nature of surface and its applications in catalysis and nanoscience.
		CO3.Application of the mathematical formulation to chemical science.
		CO4. Solve stoichiometric calculations to different chemical reactions.
		CO5.Memorize development of atomic theory.
		CO6.Apply the entropy concept to second and third law of thermodynamics.
		CO7.Understand the concept of hybridization.
		CO7.Numericals based on related topics.
	Organic and Inorganic Chemistry Paper: II	CO1Discuss the structure and reactivity of organic Molecules.
		CO2.Find out aromatic /non aromatic characters.
		CO3.Outline the chemistry of s and p-block Elements.
		CO4.Write electronic configuration of element.
		CO5.Predict the conversion of functional group.
		CO6.Explain the concept of geometrical isomerism.
	Chemistry practical	CO1. Calibrate the apparatus like volumetric flask, pipette and burette.
		CO2. Understand the determination of heat of solution, equivalent weight.
		CO3. Perform qualitative analysis of organic compounds.
		CO4. Carry out qualitative analysis of acidic and basic radicals.
		CO5. Carry out quantitative analysis by volumetric method and gravimetric methods.
		CO6. Carry out quantitative analysis by volumetric method.
		CO7. Learn the applications of types of titrations for various estimations.
		CO8. Handle viscometer to determine the viscosity and relative viscosity of liquids.
S.Y.B.Sc.	Physical and Analytical Chemistry Paper: I Semester -I CH-211 Semester-II CH-221	CO1.Understand the concept of concept of kinetics, terms used, rate laws, types of order
		CO2.Understand the mathematical equation of first order and second order reaction.
		CO3.Know types of photochemical reactions and concept of quantum yield.
		CO4.Extraction of solute from two immiscible solvent.
		CO5.Elucidation of composition diagram.
		CO6.Classify the common analytical techniques.
		CO7.Understand errors and its interpretation.
		CO8.Outline the basic principles in qualitative analysis.
		CO9.Numericals based on related topics.
	Organic and Inorganic Chemistry Paper: II Semester -I CH-212 Semester-II CH-222	CO1.Understand the concept of stereoisomerism.
		CO2.Able to suggest the possible synthetic routes of chemical reaction.
		CO3.Answer the importance and chemistry of different biomolecules
		CO4.Identify the different reagents in organic synthesis.
		CO5.Classify heterocyclic compounds.
		CO6.Understand the importance of biochemistry
		CO7.Know physico-chemical principles involved in electrometallurgy.
		CO8.Understand electrolysis of alumina, refining its alloys.

		CO9.Know differentiate between properties of pig iron, wrought iron and steel.
		CO10.Understand term corrosion, its type, mechanism and factors affecting corrosion.
		CO11.Know Methods of prevention of metal from corrosion.
		CO12.Outline the chemistry of d-block Elements.
		CO13.Understand M-C bond, organometallic compounds and its synthesis.
		CO14.Know toxic chemical in the environment and impact on human health.
	Practical Course in Chemistry (CH – 223)	CO1. Verify theoretical principles experimentally.
		CO2. Acquire skill of crystallization, record correct m. p. / b. p
		CO3.Perform the complete chemical analysis of the given organic compound and should be able to recognize the type of compound.
		CO4. Write balanced equation for all the reactions, they carry in the laboratory.
		CO5. Perform the given organic preparation according to the given procedure.
		CO6. Follow the progress of the reaction by using TLC technique.
		CO7. Set up the apparatus properly for the given experiments.
		CO8. Perform all the activities in the laboratory with neatness and cleanness
TYB Sc	Physical Chemistry Paper: I Semester - III CH-331	CO1.To study the velocity constant and rate of reaction and factors affecting on rate of reaction
		CO2.Applications of electrolytic conductance with respect to ionic product of water and solubility of sparingly soluble salt
		CO3.Rotational,vibrational and Raman spectra's to solve the problems of physical , inorganic and organic chemistry
		CO4. To study the heterogeneous systems by phase rule for one component and two component system
	Semester-IV CH-341	CO1.Applications of EMF to find out PH of unknown solution , solubility product of sparingly soluble salt and potentiometric titrations
		CO2. Applications of Radioactivity with respect to mechanism of reaction , structure of molecule, medical and agriculture sectors
		CO3. To study the NaCl Crystal Structure with the help of X Ray
		CO4. Solve the problems of Chemistry with the help Schrodinger equation
	Course: Inorganic Chemistry Paper: II Semester -III CH-332 Semester-IV CH-342	CO1.Differentiate AO's and M.O's, BMO and ABMO, VBT and MOT
		CO2.Draw of molecular orbital and calculate bond order and explain stability.
		CO3.Know the various types of Ligands and meaning of the terms used in co-ordination chemistry
		CO4.Classify the various types of isomerism.
		CO5.Explain different complexes, electro neutrality principle and multiple bonding
		CO6.Know Strong field and weak field splitting, calculation of CFSE and evidence of CFSE.
		CO7.Explain Charge transfer Spectra, John- Teller distortion, spectrochemical and nepheluxetic series.
		CO8.Draw M.O. diagram of complexes on the basis of MOT.
		CO9.Outline the chemistry of f-block Elements.
		CO10.Know biological role of inorganic ions & compounds.
		CO11.Homogenous catylysis and preparation and use of homogenous catalyst, heterogeneous catalyst use and preparation
		CO12.Understaning of metals semiconductor and superconductor
		CO13.Draw n (E) & N (E) Curves and difference between metal semiconductor and insulatoron basis of n (E) & N (E) Curves
		CO14.Understand defects in solids.
	Course: Organic Chemistry Paper: III	CO1.Compare the strength of organic acids and Bases
	Semester -III CH-333	CO2.Draw the conformational isomers of disubstituted cyclohexene and compare its stability.
		CO3.Understand mechanism and stereochemistry of Nucleophilic substitution reactions
		CO4.Learn the mechanism of reactions of unsaturated hydrocarbons and carbon oxygen double bond
		CO5. Learn the mechanism of Elimination Reaction
		CO6.Study mechanism of Aromatic Electrophilic and NUcleophilic Substituation Reaction
	Semester-IV CH-343	CO1.Understand carbanions and their reactions
		CO2. Applications of Retrosynthetic Analysis
		CO3. Study Rearragment Reactions
		CO4. Study of Spectroscopic Method in Structure determination of organic compounds
		CO5. Study of Natural Products
	Course: Analytical Chemistry Paper: IV Semester –III CH-334	CO1.Understand the principles of common ion effect and solubility product
		CO2.Conceptual understanding of electrogravimetric principle.
		CO3.Explain methods of thermo gravimetric analysis.
		CO4.Demonstrate the applications of Spectrophotometric analysis.
		CO5.Atomic Absorption Spectroscopy
		CO6 Flame Emission Spectroscopy
	Semester-IV CH-344	CO1.Solvent extraction
		CO2.Chromatography

		CO3. Gas Chromatography
		CO4. High Performance Liquid Chromatography
		CO5 Electrophoresis
		CO6 Nephelometry and turbidimetry
	Industrial Chemistry Paper-V Sem- III CH-335	CO1.Memorize the modern approach to chemical industry.
		CO2.Describe the scope of agrochemicals.
		CO3.Manufacturing of basic chemicals
		CO4.Study of petrochemicals ,Fuels and eco-friendly fuels and use of solar energy.
		CO5.Understand nutritive aspects of food constituents
		CO6.Study of cement and glass industry
	Semester-IV CH-345	CO1.Understand basic concept of polymer.
		CO2.Explain importance of Sugar Industryand fermentation industry .
		CO3. Study of sop . detergent and cosmatics.
		CO4. Study of Dyes and Paints
		CO5. Study of Chemistry of Pharmaceutical Industry
		CO.6 Outline the problems of pollution and deposal of waste of various industries
	Semester –III CH- 336E Agriculture Chemistry	CO1.Soil Chemistry
		CO2. Problematic Soil and Soil Testing
		CO3. Quality of Irrigation Water
		CO4. Plant Nutrients
		CO5 Fertilizers and Manures
		CO6 Protection of Plants
	Semester –IV CH- 336E Dairy Chemistry	CO1. Market Milk
		CO2. Common Dairy Products
		CO3. Special Milks
		CO4. Milk Proteins ,Carbohydrates and Vitamins
		CO5 Preservatives and Adulterants in Milk
		.CO6 Milk Products and Deride Milk Products
	Physical Chemistry Practical's-I CH-347	CO1. Study the rate of hydrolysis of ester and the effect of concentration on the rate of hydrolysis
		CO2. Determine concentration of unknown solutions by colorimetric method.
		CO3. Measure the pH, pKa and Ka of various acids by pH- Metry and potentiometer.
		CO4. Measure refractive index and determine unknown concentration of various solvents.
		CO5. Determine the molecular weight of a given polymer by Viscometry.
		CO6. To find out the plateau voltage of GM counter
		CO7. To find out transport number of cation by moving boundary method
	Inorganic Chemistry Practical's-II CH-348	CO1. Estimate the metal by gravimetric method.
		CO2. Carry out quantitative analysis by volumetric method.
		CO3. Prepare and determine percent purity of various inorganic complexes.
		CO4. Understand and Perform Column chromatographic technique
		CO5. Estimate Cobalt and Iron by colorimetric method.
		CO6.Analysis of Binary Mixture
	Organic Chemistry Practical -III CH-349	CO1. Understand and use Micro scale techniques for qualitative analysis
		CO2. Separate and analyze binary water soluble and insoluble mixture.
		CO3. Estimate - acetamide, glucose, ethyl benzoate by volumetric method.
		CO4. Determination of molecular weight of organic acids
		CO5. Prepare various organic compounds Single Stage Preparations (8)
		CO6. Apply the crystallization technique for purification of compounds
		CO7. Understand Thin Layer Chromatographic techniques.

Department of Botany		
F.Y.B.Sc. (Annual pattern)	Term I, Paper I : Fundamentals of Botany (Plant Diversity)	CO1. Introduction to plant kingdom and diversity among the plants.
		CO2. Make students aware about biodiversity conservation.
		CO3. Basic knowledge, importance and applications of various plant groups (Algae, Fungi, Bacteria, Lichens, Bryophytes, Pteridophytes, Gymnosperms, and Angiosperms) are given to students.
		CO4. Relationship among the plant groups and evolutionary evidences are explored to the students.
	Term II, Botany, Paper I : Fundamentals of Botany (Morphology and Anatomy)	CO1. Introduction and scope of morphology; importance of morphology in Identification, Nomenclature, Classification and Phylogeny and Plant breeding.
		CCO2. Understanding the morphology of vegetative parts (Root, Stem and Leaf) with their types, modifications and functions.
		CO3. Study of morphology of reproductive parts (Inflorescence, Flower, Floral whorls, Fruit and Seeds) in relation to their parts, types, modifications, functions and importance.
		CO4. Exploring the knowledge of internal organization of plants and their parts. Types of tissues and their role in plant body construction and functioning.
		CO5.Importance of anatomy in taxonomy, physiology, ecological interpretations, pharmacognosy and wood identification.

F.Y.B.Sc. (Annual pattern)	Term I and II, Botany Paper II : Industrial Botany	CO1. Introduction to application of Botany in agro-based industries.
		CO2. Knowledge about the plants, their parts and their applications in various agriculture based industry is given to students for generation of self employment through practices related to floriculture, Biofertilizers, nursery and organic fertilizers.
		CO3. Arrangement of workshops and hands on training to students for fruit and food processing, art and science of flower arrangement, mushroom cultivation for establishment of small scale business at local level.
		CO4. Exploring the knowledge of plant nursery techniques for establishing the nursery for
		CO5.Knowledge is given to the students with reference to infrastructure required, production strategies, marketing strategies, outputs, and commercial applications and profitability related to various agro-based industries.
		CO6. Students are made aware for sustainable agricultural development through use of knowledge related to Integrated Pest Management (IPM), organic farming, biopesticides and biofertilizer production.
		CO7. Course is taught to students to make them self-employed, confident for sustainable development in rural territory and generating the economy to farmers for better improvement of economic status of tribal community.
F.Y.B.Sc. (Annual pattern)	Term I and II, Botany Paper III : Practical's based on Theory Paper I and II	CO1. Introduction to handling of microscope, sectioning and slide preparation, practical performance in view of examination.
		CO2. Understanding the life cycle pattern of various plant groups with specimen study of Spirogyra, Cystopus, Riccia, Nephrolepis, and Cycas.
		CO3. Understanding the external morphological features of vegetative parts viz., Root, Stem and leaves, their types and modifications
		CO4. Study of external morphological features of reproductive parts viz, inflorescence, flower, floral whorls, fruits, seeds, their types, modifications and functions.
		CO5. Study of internal primary structure of monocots and dicots with reference to root, stem and leaf for observing difference at internal organization level between these two groups.
		CO6. Demonstrating the use of plant resources in food, fodder, fiber, medicine, timber and gum industries.
		CO7. Hands on training to students on artificial propagation methods: stem cutting, Air,
		CO8. Demonstration of various stages involved in plant tissue culture techniques.
		CO9. Demonstration of methods of oyster mushroom cultivation and demonstration of value added mushroom products
		CO10. Assessing the industrially important fungi and their products.
		CO11. Study of types of Biofertilizers: Rhizobium, Azatobacter, BGA, Azolla, Green manure.
		CO12. Study of biocontrol agents : Azadirachtin and Indiara.
		CO13. Hand on training for performing the recipe of Jam and squash preparation.
		CO14. Botanical excursion to the nearby biodiversity area.
		CO15. Field visit to polyhouse and nursery.
S.Y.B.Sc. (Semester pattern)	Semester I, Botany Paper I : Taxonomy of Angiosperms and Plant Community	CO1. Knowledge regarding introduction, scope and importance of taxonomy in study of angiosperm plants.
		CO2. Make aware the students with available systems of plant classification along with their merits and demerits utilized in the taxonomy from ancient period to the date for classification of flowering plants.
		C O3. Get familiar the students with taxonomic literature and data sources useful for systematic study of plants.
		CO4. Students are explored for naming the plants in botanical terms using rule of nomenclature and following the system of Binomial nomenclature.
		CO5. To understand the plant diversity, students are exposed to study the representative specimen of plant families with reference to systematic position, salient features, floral formula, floral diagram and economic importance of that family.
		CO6. Digital herbarium concept using study of computer in taxonomy for avoiding the loss of biodiversity.
		CO7. Introduction to ecology in terms of concept, types of ecology, ecosystem and their components, food chain, food web, and ecological pyramids.
		CO8. Knowledge is given to students for grouping the plants on the basis of external and internal
	Semester II, Botany Paper I : Plant Anatomy and Embryology	CO1. Introduction and scope of plant anatomy and various types of tissues.
		CO2. Study of structure and function of epidermal tissue system, types and function of stomata.
		CO3. Study of mechanical tissues with reference to their distribution in plants and following the principle for providing the strength and support to the plants.
		CO4. Information on types of vascular tissue system and their role in development of normal or abnormal secondary growth in various plant as per the need of plant.
		CO5. Study of scope and importance of plant embryology with reference to microsporangium and male gametophyte development; megasoprangium and female gametophyte development.
		CO6. In depth knowledge is provided to the students related to pollination mechanism; process and significance of double fertilization followed by structure, types, and functions of endosperm and embryo in flowering plants.
S.Y.B.Sc. (Semester	Semester I, Botany Paper II : Plant Physiology	CO1. Introduction to plant physiology and its scope and applications.

pattern)		
		CO2. Learning the Plant-water relation in terms of physic-chemical properties of water in relation to cell membrane structure and permeability.
		CO3. Study of phenomenon like Diffusion, Osmosis, Plasmolysis, Imbibition.
		CO4. Role of water in plants, mechanism of water absorption and factors affecting it.
		CO5.Study of vital, physical and transpiration pull theories of ascent of sap and factors affecting ascent of sap.
		CO6. Transpiration and stomata structure involved in transpiration; mechanism, significance and factors affecting transpiration
		CO7. Study of plant growth; phases of growth and factors affecting growth; in addition to understanding the properties and practical applications of plant growth regulators (Auxins, cytokinins, gibbrellins, ethylene, and ABA).
		CO8. Study of nitrogen metabolism with reference to BNF, and processes of denitrification, ammonification, nitrification, amination, transamination and role of nitrogen in plants.
		CO9. Learning types of seed dormancy, methods of seed dormancy and metabolic changes during seed germination.
		CO10. Understanding the physiology of flowering with reference to photoperiodism, Phytohormones, and vernalization.
	Semester II, Botany Paper II : Plant Biotechnology	CO1. Understanding concept, scope, techniques and interdisciplinary nature of Biotechnology.
		CO2. Learning the properties, classification, industrial applications, and immobilization techniques of enzymes.
		CO3. Study the methods of production of amylases, proteases and lipase enzyme.
		CO4. Understanding of fermentation technology with respect to role of microorganism and substrates used in fermentation and media composition and bioreactors and their types in
		CO5. Study of single cell protein (SCP), production of SCP from algae (Spirulina) and fungi (Yeast) and its acceptability with economic application.
		CO6. Study the phytoremediation using plants and methods of phytoremediation of environmental sustainability.
		CO7. Understanding the structure of genetic material (DNA, gene) and methods involved in isolation of gene, gene cloning and vectors
		CO8. Emphasis is given mostly on gene transfer (vector mediated and vectorless) techniques in plants for production of transgenic plants.
		CO9. Knowledge is given on Practical application of genetic engineering in crop improvement
		CO10. Introduction to Nanotechnology and its application at non-scale in the agriculture (nanofertilizers and nanopesticides).
S.Y.B.Sc. (Annual pattern)	Semester I and II, Botany Paper III : Practical's based on Theory Paper I and II	CO1. Introduction to taxonomic and ecological tools used to study taxonomy and ecology.
		CO2. Demonstrating the various experiments related to plant physiology and plant biotechnology.
		CO3. Study of plant families with reference to diagnostic features, floral formula, floral diagram, and systematic position with locally available plant material of the given family.
		CO4. Study of external and internal ecological adaptations in Hydrophytes and Xerophytes.
		CO5.Study of vegetation by List-Count Quadrate method.
		CO6. Determination of water holding capacity (WHC) and pH of different soil samples.
		CO7. Performing the physiological experiments for plasmolysis, Diffusion pressure deficit (DPD), rate of transpiration in different climatic conditions.
		CO8. Testing seed viability using TTC method.
		CO9. Study of plant anatomy with respect ot epidermal tissue system, mechanical tissue and their distribution in root, stem and leaves.
		CO10. Study of normal secondary growth in Moringa and Annona and anomalous secondary growth in Dracaena and Bignonia.
		CO11. Study of plant embryology with respect to tetrasporangiate anther, types of ovules, dicot and monocot embryo.
		CO12. Production of citric acid by fermentation and its estimation by using titration method.
		CO13. Demonstration of fermentation and fermentation products, separation of plasmid DNA by agarose gel electrophoresis and enzyme immobilization.
		CO14. Field visit to understand the knowledge of Fermentation technology, waste water treatment process.
		CO15. Botanical excursion to nearby biodiversity locality to study the family oriented taxonomic details in the given vegetation.
		CO16. Demonstration of various physiological experiments such as imbibitions experiment, curling experiment, Arc-auxanometer, Transpiration pull theory, effect of PGR on root promotion.

Department of Physics		
F.Y. B.Sc. (Annual)	Mechanics, Heat and Thermodynamics 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 energy, work, power.
		CO3. Understanding of the concepts of conservation of energy, surface tension and viscosity the concepts of elasticity and be able to perform calculations using them
	Physics Principles and Applications Paper II (Section-I)	CO 1. Understanding of the various atomic theories and calculation of energy value of atom
		CO2. 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.
	Heat and Thermodynamics Paper I. (Section –II)	CO 1. Understanding of the: properties and relationships between the thermodynamic properties of a pure substance ideal gas equation and its limitations, real gas
		CO 2. The laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process, heat engines and calculate thermal efficiency.
		CO 3. Analyze the refrigerators, heat pumps.
	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 and Coulomb‘s Law,
		CO3.Development of understanding among the students about principles of electromagnetic induction,
		CO4. Knowledge about the basics of magnetostatics.
	Practical course (paper-III)	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. (Semester-I)	PHY 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.
	(PHY 212) Electronics I (Paper-II)	CO1Apply laws of electrical circuits to different circuits.
		CO2. Understand the relations in electricity and properties and working of transistors.
		CO3. Understand the functions of operational amplifiers.
		CO4 Design circuits using transistors and operational amplifiers.
		CO5. Understand the Boolean algebra and logic circuits.
(Semester-II)	(PHY221) 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 of oscillatory motion.
		CO4. Explain oscillation in terms of energy exchange, giving various examples.
		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.
	(PHY 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.
	(PHY 223) Practical Paper III (Annual)	CO 1. Use various instruments and equipment.
		CO2. Design experiments to test a hypothesis and/ 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. Analyze data, plot appropriate graphs and reach conclusions from your data analysis.
T.Y. B.Sc. Semester-I	(PH 331) Mathematical Methods in Physics II(PH 331)	CO1. Calculate with vectors and scalars in physics.

		CO2. Determine the difference between Complex numbers and Real number.
		CO3. Learn geometrical representation of complex numbers.
		CO4. Find Fourier Series of periodic function,
		CO5. Use Laplace transform as tools of Physics.
	PH 332) Solid State Physics	CO_1. Have a basic knowledge of crystal systems and spatial symmetries.
		CO_2. Be able to perform structure determination of simple structures.
		CO_3. Know the significance of Brillouin zones,
		CO_4. Know Bloch's theorem and what energy bands.
		CO_5.Know the fundamental principles of semiconductors, including pn-junctions, and be able to estimate the charge carrier mobility and density.
		CO_6. Be able to account for what the Fermi surface is and how it can be measured.
	PH 333) Classical Mechanics	CO_1. Training the students of B. Sc. class in the Mechanics of the particles.
		CO_2. Motion of central force, scattering of particles, Lagrangian and Hamiltonian formalisms to an scope that they can use these in the modern branches.
	(PH 334) Atomic and Molecular Physics	CO 1. Describe the latest vector atom model and drawbacks of previous models.
		CO2. Know and understand the normal and anomalous Zeeman effect, Paschen Back 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.Discuss the concept and role of in distinguish ability in the theory of gases; know the results expected from classical considerations and when these should be recovered.
		CO6. Define the Fermi-Dirac and Bose-Einstein distributions; state where they are applicable.
	(PH 335) Computational Physics	CO_1.Familirization with the numerical methods used in computation and programming using C+ language
		CO_2.They can use these in solving simple problems pertaining to Physics.
	(PH 336) Elements of Materials Science	CO1. The main outcome of this course on Physics of materials is to familiarize the students to the various aspects related to materials
		CO2. Study of different physical properties of the materials so that they can pursue this emerging research field as career
Semester-II	(PH 341) Classical Electrodynamics	CO1. The outcome of this course is 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.
	(PH342) Quantum Mechanics	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;
		CO5. Describe the structure of the hydrogen atom and show an understanding of quantization of angular momentum
	(PH 343) Thermodynamics and Statistical Physics	CO1. Describe the latest vector atom model and drawbacks of previous models,
		CO2. Know and understand the normal and anomalous Zeeman effect, Paschen Back effect and 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. Discuss the concept and role of indistinguishability in the theory of gases; know the results expected from classical considerations and when these should be recovered.
		CO6. Define the Fermi-Dirac and Bose-Einstein distributions; state where they are
	(PH344) 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
	(PH345) Electronics II/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 sub tractors. More about sequential logic circuits i.e. Asynchronous.
	(PH346) Laser	CO 1. Elective course like Laser keep student update with current applications of Laser in technology.
	Practical Courses (Annual)	CO1. Laboratory course I deals with the experiments based on fundamental concepts in Physics.

	(PH347) Laboratory Course I	CO2.Laboratory course II involve experiments using electronic devices and program writing with C.
	(PH348) Laboratory Course II	CO3.Laboratory course III gives free hand to student to work in any physics subject to carry
	(PH349) Laboratory Course III(Project)	

Department of Zoology		
F.Y. B.Sc. (Annual)	(ZY 101) Animal Systematics and Diversity I (Section-I) Paper I.	CO 1 Study of principles of classification: Systematics, Binomial nomenclature, five kingdom classification system.
		CO 2. Study of Salient features and classification of invertebrate phyla like Protozoa, Platyhelminthes, Aschehelminthes and Annelida.
		CO 3. Study of *Paramoecium* related to systematic position, structure, nutrition, excretion and reproduction.
		CO 4. Study of earthworm related to systematic position, characters, body systems and economic important's.
	Animal Systematics and Diversity II (Section-II)	CO1. Salient features and classification of some protochordates like Hemichordata, Urochordata and Cephalochordata.
		CO 2. Salient features of class Pisces and Amphibian.
		CO 3. Study of frog in related to systematic position, external characters and systems like digestive, circulatory CNS and reproductive system.
		CO 4. Study of some classes with specific characteristics like migration in fishes, neoteny and parental care inamphibia.
	(ZY 102) Fundamentals of Cell Biology (Section-I) Paper II.	CO1. Study of the concepts of cell Biology.
		CO 2. Study of the scope of Cell Biology.
		CO 3.Study of cell structure and cell functions.
		CO 4.Study of broad description of bio-chemistry of cell, structure & functions of cell
		CO 5.Study of cell biology with its concern aspects scientifically.
		CO 6.Study of the cellular activities.
		CO 7.Study of significance of cell & its molecular activities.
		CO 8.Study of cancer cell & cancer causing agents.
	Genetics (Section-II)	CO1. Study of fundamentals of Genetics, Mendalian ratios & modified Mendalian ratios.
		CO2. Study of awareness about Heredity & Inheritance of traits/ disease.
		CO3. Study of chromosome, its types and structure.
		CO4. Study of applications of genetics.
	ZY-103 PRACTICAL COURSE	CO 1. To study the classification with reasons of Phylum Protozoa, Phylum Porifera.
		CO 2. To study the classification with reasons of the Phylum Coelenterata, Platyhelminthes.
		CO 3. To study the classification with reasons of the Phylum Aschelminthes, Annelida.
		CO 4. Culturing of *Paramoecium.*
		CO 5. Study of live *Paramoecium.*
		CO 6. Study of external characters, binary fission & conjugation in *Paramoecium.*
		CO 7. Study of external characters and digestive system of Earthworm.
		CO 8. Study of reproductive (male and female) system of Earthworm.
		CO 9. Study of nervous system of Earthworm.
		CO 10. Earthworm mounting- septalnephridia, setae and spermatheca.
		CO 11. Study of prokaryotic and eukaryotic cell with the help of suitable material.
		CO 12. Study of temporary preparation of different mitotic stages from onion root tip cells.
		CO 13. To study the classification with reasons of the Hemichordata, Urochordata, Cephalochordata.
		CO 14. To study the classification with reasons of the Cartilaginous fishes, Bony fishes, Amphibia.
		CO 15. Study of external characters, sexual dimorphism and digestive system of Frog.
		CO 16. Study of brain of Frog with the help of model/ chart
		CO 17. Study of monohybrid ratio and dihybrid ratio by providing hypothetical data and deducing applicability of Mendelian law.
		CO 18. Preparation of culture media and maintenance of *Drosophila* culture
		CO 19. Study of *Drosophila* : External characters and sexual dimorphism.
		CO 20. Study of *Drosophila* mutants (any two eye and any two wing mutant).
		CO 21. Study of genetic traits in human beings.
		CO 22. Study of normal human karyotype from metaphase chromosomal spread picture.
		CO 23. Study of blood groups in human (ABO and Rh).
		CO 24. Study of any 3- cell organelles from electron micrographs.
		CO 25. Compulsory visit to vermiculture unit/biodiversity spot/ZSI/large water body.
S.Y.B.Sc. Semester-I	ZY- 211 Animal Systematics and Diversity III Paper-I	CO 1. Study of invertebrate phyla like Arthropoda, Mollusca & Echinodermata
		CO 2. Study of Arthropoda, Mollusca Echionodermata with reference to there specific characteristics like mimicry larval forms, shell and foot modification and
		CO 3. Detailed study of morphology and physiology of various system of Asterius.
	ZY- 212 Applied Zoology (Fisheries & Agricultural Pests and their Control) Paper II	CO 1. Study of different types of fisheries and ponds.
		CO 2. Study of culture of freshwater fishes like Rohu, Catla, Mrigal and Prawn.
		CO 3. To learn harvesting methods of some marine forms like Harpedon, Mackeral, lobster, Pearl oyster.
		CO 4. Study of fishery byproducts and different fish preservation techniques.

		CO 5. Study of Pests and Various types of Pests.
		CO 6. Understand the Insect pests of Agricultural Importance.
		CO 7. Study of Non-insect Pests.
		CO 8. Learn the pest control practices in brief.
		CO 9. Study of the plant protection appliances.
		CO 10. Study of pesticides.
S.Y.B.Sc. Semester-II	(ZY 221) Animal Systematics and Diversity V (Paper-I)	CO 1. Study of invertebrate phyla like Arthropoda, Mollusca & Echinodermata.
		CO 2. Study of Arthropoda, Mollusca Echionodermata with reference to there specific characteristics like mimicry, larval forms, shell and foot modification and pedicillariae.
		CO 3. Learn morphology and physiology of various system of Asterius.
	(ZY 222) Applied Zoology II (Apiculture & Sericulture)	CO 1 Understand the concept of Apiculture and nesting behavior of A. dorsata, A. florae, A.
		CO 2. Study of bee keeping equipment.
		CO 3. Study of bee keeping and seasonal management.
		CO 4. Study of different types of bee products.
		CO 5. Study of bee diseases and enemies.
		CO 6. Study the concept of Sericuture and different types of silkmoth like Mulberry, Tassar, Eri and Muga silkworms in India.
		CO 7. Study of morphology and life cycle of Bombyxmori .
		CO 8. Study of cultivation and harvesting of mulberry plant.
		CO 9. Study of silkworm rearing and postharvest processing.
S.Y.B.Sc. (Annual Examination)	Semester-I and II Paper III- ZY-223: Practical course	CO 1.Study and classification with reasons of the following animals Phylum Arthropoda:- Scorpion, Crab, Cockroach, Head louse, Centipede, Peripatus.
		CO 2. Study and classification with reasons of the following animals Phylum Mollusca:- Chiton, Snail, Bivalve, Dentalium, Octopus,
		CO 3. Study and classification with reasons of the following animals Phylum Echinodermata:- Star fish, Brittle star, Holothuria, Sea Urchin, Echinus.
		CO 4. Study of permanent slides of mouthparts of the following insects : (D)
		Cockroach, Mosquito, Plant bug/Bed bug, Butterfly, Honey Bee and Housefly
		CO 5. A) Study of Shell:- Chiton, Pila, Sepia, Pecten, Dentalium,
		B) Study of Foot:- Chiton,Patella, Aplysia, Sepia, Octopus, Dentalium
		CO 6. To Study the external characters and digestive system of starfish.
		CO 7. A) Study of water vascular system of starfish. (E)
		B) Temporary preparation of gonads from starfish.
		CO 8. A) Study of permanent slides of T. S. of arm and types of pedicellariaeof starfish.
		B) Larval forms in Echinodermata.
		CO 9. Identification, Classification and study of habit, habitat and economic importance of the following:
		a) Rohu, Catla, Mrigal, Pomphret.
		b) Prawn, Crab, Oyster.
		CO 10. Study and maintenance of Aquarium.
		CO 11. Study of any three types of crafts and gears in fishing.
		CO 12. Study of insect pests with respect to marks of identification, nature of damage and economic importance.
		CO 13. Study of pest control appliances (Sprayer/Duster)
		CO 14. Study and classification with reasons of the Class Reptilia – Cobra, Garden lizard, Turtle, Rat snake, Draco
		CO 15.Study and classification with reasons of the Class Aves, Class Mammals.
		CO 16. Identification of Poisonous and non- poisonous snakes.
		CO 17. Study of modifications of beaks and feet in birds a) Beaks: tearing and piercing, fruit eating, mud probing, fish catching, wood chiseling and flower probing. b) Feet: perching, raptorial, climbing, swimming, running.
		CO 18. Study of external characters and digestive system of Scoliodon.
		CO 19. Study of brain of Scoliodon.
		CO 20. a) Making temporary preparation of placoid scales from Scoliodon.
		b) Study of cranial nerves, eye ball muscles of Scoliodon (D)
		c) Study of Membranous labyrinth of Scoliodon
		CO 21. a) Study of life cycle of Honey bee.
		b) Study of mouth parts, thoracic appendages (legs and wings) and sting apparatus of Honey bee
		CO 22.Study of various bee keeping equipments
		CO 23 Study of: a) bee products, b) bee pests, d) bee enemies
		CO 24.a) Study of life cycle of Bombyxmori.
		b) Study of any five equipments in Sericulture.
		CO 25. Understand how to create field visit report.
		CO 26. To visit sea coast, agriculture, apiculture, sericulture farm.
T. Y. B. Sc. Sem. III	ZY- 331 Animal Systematics and Diversity- V (Paper I)	CO 1. Study of *Pilaglobosa* with reference to Systematic position, habit, habitat and external characters, Body wall&pallial complex Functional anatomy.
		CO 2. Study of Protozoa, Porifera, Coelenterata&Hemichordata.
		CO 3. Study of *Calotesversicolor* with reference to Systematic position, habit, habitat and External characters, Functional Anatomy
		CO 4. Comparative study of Integument, Heart, Kidney, & Brain.

		CO 5. Study of Pisces, Reptilia, & Mammalia.
	ZY- 332 Mammalian Histology (Paper II)	CO 1. Study of basic concepts of Mammalian Histology.
		CO 2. Study of different types tissues.
		CO 3. Histological study of Skin, Tooth, Tongue, Alimentary canal, Glands associated with digestive system, Respiratory organs, Kidney, Blood vessels & Reproductive organs.
		CO 4. Study of Histology of endocrine glands.
	ZY-333 Biological chemistry (Paper III)	CO 1. Study of Basic concepts of Biological Chemistry
		CO 2. Study of Carbohydrates, their classification &Stereochemical properties
		CO 3. Study of Proteins, Their structures & classification, Peptide bonds, Biological significance of proteins.
		CO 4. Study of Enzymes, classification of enzymes, enzyme kinetics, Factors influencing enzyme activity.
		CO 5. Study of Lipids, classification and chemistry, Clinical significance, Biological significance of lipids.
	ZY-334 Environmental Biology and Toxicology (Paper IV)	CO 1. Study of Basic concepts of Environmental Biology.
		CO 2.Study of The Ecosystem, abiotic and biotic components and their interrelationship Energy flow in
		ecosystem, Major Ecosystems, Food chain in ecosystem and food web, Ecological pyramids.
		CO 3. Study of Environmental Pollution like Air pollution, Water pollution, Soil pollution & Noise pollution. It's sources and Control measures.
		CO 4. Study of Environment and Development - Bioindicators and environmental monitoring, Environmental challenges in India.
		CO 5. Study of Natural Resources and its Conservation.
		CO 6. Study of Wildlife Management, causes of wildlife depletion, Importance of wildlife management in India, & Wild life conservation.
		CO 7. Study of Fundamentals of toxicology, Types of Toxicant & Factors influencing toxicity.
		CO 8. Study of Toxicants of Public Health and Hazards.
	ZY- 335 Parasitology (Paper V)	CO 1. Study of basic concepts of Parasitology.
		CO 2. Study of different types of parasites.
		CO 3. Study of different types of hosts.
		CO 4. Study of Host-Parasite relationship.
		CO 5. Study of parasites with their habit, habitat, Life cycle, Mode of Infection, pathogenicity and control measures.
		CO 6. Study of parasites with their morphology, life cycle, pathogenicity and control measures.
		CO 7. Study of Parasitological significance of Zoonosis.
		CO 8. Study of Control measures of arthropod vectors of human diseases.
		CO 9. Study of Epidemic diseases.
	ZY- 336 b) Cell Biology (Paper VI)	CO 1. Study of basic concepts of Cell biology, Size & shape of cells.
		CO 2. Study of Plasma membrane, different membrane concept.
		CO 3. Study of Endoplasmic reticulum, Type & Functions.
		CO 4. Study of Golgi complex, occurrence, morphology, Ultrastructure and functions.
		CO 5. Study of Lysosomes, Origin, occurrence, morphology, Ultrastructure, polymorphism and functions
		CO 6. Study of Mitochondria, Origin, occurrence, morphology, Ultrastructure and functions.
		CO 7. Study of Nucleus, Shape, Size, number, position. Ultrastructure of nuclear membrane and pore complex , chemical composition and functions.
		CO 8. Study of Cytoskeleton, Microfilaments, Intermediate Filament & Microtubules. Its location, ultrastructure, biochemical composition and functions
		CO 9. Study of Cell cycle and cell division, Various phases of cell cycle, mitosis, meiosis & role of centriole in the cell division
		CO 10. Study of Cellular ageing and cell death
		CO 11. Study of Cancer cell : Characteristics & Theories/ hypothesis regarding causes of cancer
T. Y. B. Sc. Sem. - IV	ZY- 341 Biological Techniques (Paper I)	CO 1. Study of basic concepts of Biological techniques.
		CO 2. Study of Haematological Techniques - Blood cell count, Microscopy, Micrometry, Camera Lucida. Its principles and working.
		CO 3. Study of Micro technique - Fixatives: Classification of fixatives and importance of fixation of tissues. Methods of fixation. Dehydration, clearing, impregnation and block making
		CO 4. Study of Microtomes and Knives: Types of microtomes & microtome knives. Section cutting Mounting and spreading of ribbons.
		CO 5. Study of Stains and Staining, types, Methods and types of staining, Mounting and labeling of sections.
		CO 6. Study of Histochemical staining.
	ZY- 342 Mammalian Physiology & Endocrinology (Paper II)	CO 1. Study of Mammalian Physiology & Endocrinology.
		CO 2. Study of Nutrition, Physiology of digestion
		CO 3. Study of Circulation, Cardiac Cycle- systole, diastole and pacemakers, Cardiac output and blood pressure.significance of electrocardiogram, colourdoppler, angioplasty, angiography, angina pectoris, and coronary bypass

		CO 4. Study of Respiration, Definition and types- Pulmonary and tissue respiration & Mechanism of transport of gases.
		CO 5. Study of Excretion, Physiology of Urine formation, Counter-Current Multiplier theory for urine
		concentration, Role of ADH, and Renin angiotensin system,Definitions and clinical significance of- renal failure,renal calculi &dialysis.
		CO 6. Study of Ultrastructure of striated muscle, Sliding filament theory of muscle contraction, Response of muscles to stimulation
		CO 7. Study of Origin and conduction of nerve impulse, saltatory conduction, Synapse, Definitions/concepts
		CO 8. Study of Reproductive cycles with hormonal control.
		CO 9. Study of Endocrine disorders, Mechanism of hormone action.
	ZY -343 : Genetics and Molecular Biology (Paper III)	CO 1. Study of fundamentals of Genetics and Molecular Biology.
		CO 2. Study of Gene Mutation, Types of mutations, & Mutagenic agents.
		CO 3. Study of Basic Concepts in population genetics, Hardy Weinberg law and its equilibrium.
		CO 4. Study of Molecular Biology, DNA as genetic material, RNA as genetic material.
		CO 5. Study of DNA Replication, Transcription, Translation events & mechanism.
		CO 6. Study of Concept of operon & regulation of gene action
		CO 7. Study of fundamentals of recombinant DNA Technology
	ZY-344 Organic Evolution (Paper IV)	CO 1. Study of Basic concepts of Organic evolution
		CO 2. Study of Evidences in favour of organic evolution
		CO 3. Study of Theories of organic evolution – Lamarckism, Darwinism, Mutation Theory & Modern Synthetic theory.
		CO 4. Study of Isolation - Isolating mechanism & Classification of isolating mechanism.
		CO 5. Study of Speciation - Types of speciation, Mechanism of speciation, Patterns of speciation & Factors influencing Speciation.
		CO 6. Study of Geological Time Scale
		CO 7. Study of Animal Distribution - Methods of distribution, Classification of animal distribution, Patterns of animal distribution & Factors affecting distribution.
		CO 8. Study of Antiquity of Man - Evolution of anthropoids including man
		CO 9. Study of Zoogeographical Realms - With reference to fauna
	ZY-345 : General Embryology (Paper V)	CO 1. Study of Basic concepts of General Embryology
		CO 2. Study of Concepts in Developmental Biology
		CO 3. Study of Gametogenesis – Sperm, Spermatogenesis, Oogenesis phases, Oocyte maturation, Ovum: general structure Egg membranes: primary & Types of eggs
		CO 4. Study of Fertilization – types, Attraction of gametes, Sperm penetration, Activation of ovum, Amphimixis& Significance of fertilization
		CO 5. Study of Cleavage - Mechanism, Planes and symmetry, Patterns / Types & Significance
		CO 6. Study of Blastula – concept & types.
		CO 7. Study of Gastrulation - Basic cell movements in gastrulation, Organizer & Organogenesis
		CO 8. Study of Chick Embryology
		CO 9. Study of Extra embryonic membranes
	ZY-346 : b) Medical Entomology(Paper VI)	CO 1. Study of Fundamentals of Medical Entomology
		CO 2. Study of Morphology and anatomy of insects
		CO 3. Study of Fundamentals of Veterinary entomology
		CO 4. Study of Insects as social groups
		CO 5. Study of House hold insects in relation to human-
		CO 6. Study of Study of insects as causing agents of human diseases- their classification up to family, appearance, habit, brief life history, distribution, diseases caused and control measures
T. Y. B. Sc. Semester III	ZY- 331 : Animal Systematics and Diversity- V (Paper I)	CO 1. Study of external characters and digestive system of *Pila*
		CO 2.A) Study of Nervous system of *Pila*
		B)Temporary mounting of radula, osphradium and statocyst of *Pila*
		CO 3. Demonstration of external characters and digestive system of *Calotes*
		CO 4. Demonstration of arterial and venous system of *Calotes*
		CO 5. Demonstration of nervous system of *Calotes*
		CO 6. A) Demonstration of male and female urinogenital systems of *Calotes*
		B) Demonstration of Temporary mounting of scales, pecten and hyoid apparatus of *Calotes*
		CO 7. Demonstration of Spicules in sponges
		CO 8. Demonstration of*Balanoglossus* -external characters, T. S. through proboscis, collar and trunk
		CO 9.A) Demonstration of Scales in fishes: Placoid, Cycloid, and Ctenoid
		B) Demonstration of Heart: *Scoliodon,* Frog, *Calotes* , Pigeon and Rat
		C) Demonstration of Brain *: Scoliodon,* Frog, *Calotes* , Pigeon and Rat
		CO 10. Demonstration of accessory respiratory organs in fishes: *Anabas, Labeo, Clarias*

		CO 11. Compulsory study tour to visit costal locality / Bio-diversity area / science center- prepare tour report and submit at the time of examination
	ZY- 332 Mammalian Histology (Paper II)	CO 1. Demonstration of different types of tissues with the help of permanent slides
		CO 2. Study of Temporary mounting of tissues : a) medullated nerve fiber b) striated muscle fiber
		CO 3. Demonstration of permanent histological slides of skin, tooth, tongue, stomach, duodenum, ileum, liver, pancreas and any one salivary gland
		CO 4. Demonstration of permanent histological slides of trachea, lung, kidney, testis, ovary, thyroid and adrenal gland.
		CO 5. Study of human blood smear to observe different cells
	ZY-333 Biological chemistry (Paper III)	CO 1. Study of principle and working of pH meter and measuring pH of three samples
		CO 2. To study the effect of pH, temperature and inhibition on salivary amylase
		CO 3. Detection of carbohydrates withthe help of suitable tests
		CO 4. Isolation of casein by adjusting isoelectric point
		CO 5. Study of preparation of standard acid and alkali and its standardization
	ZY-334 Environmental Biology And Toxicology (Paper IV)	CO 1.Study of fresh water plankton
		CO 2. A visit to water body to study physiochemical properties of water.
		CO 3. Study of physiochemical properties of soil sample
		CO 4. Estimation of dissolved oxygen in water by winkler's method
		CO 5. Estimation of dissolved CO2in water
		CO 6. Hypothetical problem to determine LC50 and LD50
	ZY- 335 Parasitology (Paper V)	CO 1. Study of Life cycle of *Plasmodium vivax* and *Entamoebahistolytica*
		CO 2. Study of Life Cycle –*Ascarislumbricoides* and *Taeniasolium*
		CO 3. Study of morphology and pathogenicity of Head louse, Tick, Mite and blister beetle
		CO 4. Study of vectors—mosquito, rat flea, house fly and bed bug
		CO 5. Demonstration of rectal parasites of cockroach
	ZY- 336 b) Cell Biology (Paper VI)	CO 1. Study of detection of mitochondria by Janus Green B
		CO 2. Demonstration of mitosis & meiosis
		CO 3. Study of temporary preparation of different mitotic stages from onion root tip cells
		CO 4. To study the effect of Colchicine on mitosis
		CO 5. Study of temporary preparation of different meiotic stages from grasshopper testis /Tradescantia/ Onion floral bud
T. Y. B. Sc. Sem. - IV	ZY- 341 Biological Techniques (Paper I)	CO 1. A) Study of Principle & use of camera lucida B) Study of micrometer
		CO 2. Demonstration of Tissue collection & fixation. Block making
		CO 3. Demonstration of Sectioning, staining & mounting. Submission of any three permanent slides from three different organs
		CO 4. Demonstration of Total count of W.B.Cs.
		CO 5. Study of principle and applications of colorimeter and spectrophotometer
		CO 6. Demonstration of Separation of amino acid mixture by ascending paper chromatography.
	ZY- 342 Mammalian Physiology & Endocrinology (Paper II)	CO 1. A) Estimation of haemoglobin, B) Preparation of haemin crystals
		CO 2. Study of the effects of various osmolarities on erythrocytes
		CO 3. Estimation of the blood glucose level
		CO 4. Estimation of bleeding and clotting time
		CO 5. Study of any five disorders caused by endocrine glands with the help of photographs
	ZY -343 Genetics and Molecular Biology (Paper III)	CO 1. Study of Hardy- Weinberg law with suitable recording of genetic traits
		CO 2. Temporary preparation of polytene chromosome from suitable material
		CO 3. Estimation of DNA by Diphenylamine method
		CO 4. Detection of DNA and RNA by MethylgreenPyronin
		CO 5. Preparation of DNA paper model
	ZY-344 : Organic Evolution (Paper IV)	CO 1. Study of morphological similarities and differences between man and ape
		CO 2. Study of types of fossils with the help of specimens/ charts/ photos
		CO 3. Study of animal adaptations in: Turtle, Draco, Exocoetus, Bat and Parrot
		CO 4. Study of evidences of evolution- embryological, palaentological, connecting links, morphology and comparative anatomy.
		CO 5. Study of successive stages of evolution of man: a) Australopithecus b) *Homo erectus* c) *Homo neanderthalis d) Cro-magnon man e) Homo sapiens*
		CO 6. To record Zoogeographical distribution of animals to respective zoogeographical realms on the world map
	ZY-345 : General Embryology (Paper V)	CO 1. Study of sperm smear, types of eggs.
		CO 2. To study the types of blastulae and gastrulae
		CO 3. Study of whole mount slides of chick embryology – 24h, 33hr and 48 hr
		CO 4. To study the sections of chick embryo--24hr, 33hr and 48 hr
		CO 5. Ex-vivo culture of chick embryo
		CO 6. Temporary preparation of chick embryo
	ZY-346 : b) Medical Entomology(Paper VI)	CO 1. Study of interrelationships of insects and man
		CO 2. Study of household insects in relation to human health
		CO 3. Study of social insects- honey bee and termites
		CO 4. Temporary preparation of mouth parts of harmful insects—mosquito, bed bug and housefly
		CO 5. To study control methods of harmful insects with suitable examples

Department of Mathematics		
F.Y.B.Sc. (Annual)	Paper I - Algebra and Geometry	CO1.The course aids in basic understanding of numbers, matrices, geometrical aspects .
		CO2.Study of lines and circles in 3D,spheres ,cones,cylinders and their geometric property
	Paper II - Calculus and Differential equations	CO1. Study of functions , three types and continuity , differentiability and application of derivative , integration .
		Co2.Application of differential equation and Study of some geometric interpretation .
	paper III - Practical course	CO1. To Study some techniques to solve problems related to theorotical part of syllabus .
S.Y.B.Sc. (SEM I)	Paper I-Multivariable Calculus	CO1.Study of some functions containg two or more variables
		CO2.Study of continuity differentaibility , partial differentiation , application of partial diffferentiation , double, triple integration of the function containg two or more variable
	Paper II- Laplace transform	CO1. Study of defination and basic properties of Laplace transform and inverse laplace transform .
		CO2.Application of laplace transform for solving differential equation fourier series and its application .
	Paper III- Practical course .	CO1. To Study some techniques to solve problems related to theorotical part of syllabus .
SEM II	Paper I - Linear Algebra	CO1.Study of vesctor spaces and subspaces .
		CO2.Study of how to find basis and dimension of vector spaces , Study of linear operator and there properties .
		CO3.Study of inner product spaces and its properties , gram schmidth process .
	Paper II - Numerical Techniques	CO1. Study of use of numerical method to find the solution of trancendental and polynomial equations .
		CO2.Use of least square method for fitting of curve , interpolation , numerical integration , Taylor series method , Eulers modified method , Rungkutta method to find the solution of differential equation of first order and first degree .
	Paper III- Practical course .	CO1. To Study some techniques to solve problems related to theorotical part of syllabus .
T.Y.B.Sc. SEM III	Paper I -Metric space	CO1.Defination and examples of metric spaces , Study of basic definations open set , closed set, lim point isolated point .
		CO2.Study of contineous functions , copleteness , compactness and connectedness.
	Paper II- Real analysis I	CO1.Study basic concept of sets and functions .
		CO1.Study of sequence and series of real number , convergence and divergence of series .
	Paper III- problem course based on paper I and II	CO1. Imaparting skills for problem solving .
	Paper IV - Group Theory	Co1.Study of groups and subgroups , permutation group .
		CO2.Study of homomorphism , isomorphism and factor group .
	Paper V- ordinary differential equation	CO1.Study of ordinary differential equations and its types .
		CO2.Study of Linear differential equation with constant coefficients , non homogeneous differentail equation , power series solution and system of first order equation
	Paper VI- problem course based on paper IV and V	CO1. Imaparting skills for problem solving .
	Paper VII- Operational Research	CO1. Formation of Linear programming problem .
		CO2.Study of simpex method to find optimal solution , Duality , transportation model to minimize the transportation cost ,assignment model
	Paper VIII- Number theory	CO1.Study of basic concepts of number theory divisibility , division algorithm ,GCD,LCM,Fermats theorem .
		CO2. Study of congruences , qudratic reciprocity and diophantine equations .
	Paper IX- practical course	CO1. To Study some techniques to solve problems related to theorotical part of syllabus .
SEM IV	Paper I - Complex Analysis	CO1.Knowledge of basic concept of complex number , anyalitic functions and elementary functions .
		CO2.Study ofcontour integrals , cauchy residue theorem , cauchy integral formula , series , residue and poles .
	Paper II- Real analysis II	CO1.Defination and existance of Riemann Integral and its properties .
		CO2. Defination of improper integrals of first and second kind , test of convergence of improper integral .
		CO3.Concept of Pointwise and uniform convergence in sequence and series of functions .
	Paper III- problem course based on paper I and II	CO1. Imaparting skills for problem solving .
	Paper IV - Ring Theory	Co1.Study of Rings and Field , integral domain .
		CO2.Study of homomorphism , isomorphism and factor Rings .
		CO3.Factorization in unique factorization domain and euclidean domain , gausian integers and multiplicative norms .
	Paper V- Partial differential equation	CO1.Study of ordinary differential equation of two or more variables and their methods of substitutions .
		CO2.Study of first order partial differential equations , its types and different methods of solutions .
	Paper VI- problem course based on paper IV and V	CO1. Imaparting skills for problem solving .
	Paper VII- Optimization technique	CO1. Study of CPM , PERT to find the shortest path of Network .
		CO2. Study of dicision analysis and to find the optimal solution of different types of games .
		CO3. Replacement and maintence model and sequencing problems .
	Paper VIII- Computational Geometry	CO1.Study of two dimensional and three dimensional transformation .

		CO2.Knowledge of curve representation and their properties , proprties of beizer curves .
	Paper IX- practical course	CO1. To Study some techniques to solve problems related to theorotical part of syllabus .

Course Outcomes (Cos) of Master of Arts (M.A.)		
Department of English		
M.A. Part I	Paper 1.1& 2.1	CO1. Introduction to major movements and figures of English literature.
		CO2. Enhancement of literary and linguistic competence of students.
	Paper 1.2 &2.2	CO1. Enhancement of literary and linguistic competence of students.
		CO2. Creation of literary sensibility for appreciation of literary works.
	Paper 1.3 &2.3	CO1. Introduction to basic tools of language study.
		CO2. Introduction to various sub-disciplines of linguistic.
	Paper 1.4 &2.4	CO1. Introduction to nature function and relevance of literary theory and criticism.
		CO2. Introduction to important critical approaches.
M.A. Part II	Paper 3.1 & 4.1	CO1. Creation of literary sensibility and emotional response to literary text.
		CO2. Introduction to major movements and figures of Indian literature in English.
	Paper 3.3 & 4.3	CO1. Creation of literary sensibility for poetic appreciation.
		CO2. Enhancement of literary and linguistic competence.
	Paper 3.4 & 4.4	CO1. Introduction to major movements in Drama.
		CO2. Creation of literary sensibility and appreciation.
	Paper 3.9 & 4.9	CO1. Introduction to the basic concepts of research.
		CO2. Familiarization to the procedures involved in research.

Department of Marathi		
Paper I	व्यावहारिक व उपयोजित मराठी भाग १व २	CO1 व्यावहारिक व उपयोजित मराठी भाषा व वा वाङ्मयाचे प्रगत ज्ञान घेणे.
		CO 2 लेखकाचा समग्रलेखक म्हणून अभ्यासाची समज निर्माण होण्यास मदत होणे.
		CO 3 व्यक्तिमत्त्व विकासासाठी भाषिक कौशल्ये आत्मसात करणे.
Paper II	मध्ययुगीन मराठी वाङ्मयाचा इतिहास (इ.स.प्रारंभ ते १६००)	CO1 मध्ययुगीन कालखंडाच्या आधारे मराठी वाङ्मयाचा इतिहासाचा परिचय करून देणे.
		CO2 मराठी भाषेचा उगम व विकासाच्या आधारे आद्य कवी विषयक माहिती देणे.
		CO3 विविध पंथांच्या वाङ्मयीन प्रेरणा ,काव्यपरंपरा व गद्यपरंपरा लक्षात आणून देणे
Paper III	भाषाविज्ञान : वर्णनात्मक आणि सामाजिक	CO1 साहित्याभ्यासाच्या विविध विषयांची जाण निर्माण करणे.
		CO2 चिकित्सक अभ्यास करण्याची क्षमता रूजविणे.
		CO3 साहित्याच्या व्यवच्छेदक लक्षणाबाबत विचार करून मूल्यमापनाचा दृष्टीकोन वाढविणे.
Paper IV	ग्रामीण व दलित साहित्य	CO1 स्वातंत्र्यप्राप्ती नंतरच्या कालखंडात ग्रामीण- दलित साहित्याची निर्मिती परंपरा समजावून देणे.
		CO2 ग्रामीण व दलित साहित्याचे स्वरूप व कार्य यांची चिकित्सा व मूल्यमापन क्षमता विकसित करणे.
		CO3 ग्रामीण व दलित साहित्याने दिलेले योगदान,त्यांच्या विकासाची गती, दिशा यांची मीमांसा करणे.
M.A. II - Marathi		
Paper V	प्रसारमाध्यमे आणि साहित्यव्यवहार	CO1 प्रसारमाध्यमांकरिता लेखन कौशल्य आत्मसात करणे.
		CO2 प्रसारमाध्यमांचे समाजातील महत्त्व विशद करणे.
		CO3 प्रसारमाध्यमात सेवेची संधी उपल्बध व्हावी म्हणून विद्यार्थ्यांमध्ये क्षमता विकसित करणे.
Paper VI	साहित्य : समीक्षा व संशोधन	CO1 समीक्षेची संकल्पना व समीक्षा व्यवहाराची समज वाढीस लागणे.
		CO2 संशोधनाची संकल्पना, प्रयोजन व पद्धती यांचा परिचय करून घेणे.
		CO3 मराठी साहित्य संशोधकांची परंपरा व समीक्षा करण्याची दृष्टी व क्षमता विकसित करणे.
Paper VII	विशेष लेखकाचा अभ्यास (अर्वाचीन)	CO1 विशेष लेखकाची वाङ्मयीन आकलन, लेखकाच्या व्यक्तिमत्वाची जडणघडण, सांस्कृतिक व वाङ्मयीन निर्मिती स्वरूप व प्रेरणा समजावून घेणे.
		CO2 लेखकाचा कालखंड व त्याची साहित्यनिर्मिती संबंधचा शोध घेऊन कालतत्व व चिरंतनतत्व यांचा मागोवा घेणे
		CO3 साहित्यकृतीचा क्रम लक्षात घेऊन लेखकाच्या लेखनातील परिवर्तन तिच्या निर्मितीतील वैविध्य,लेखकाचे स्थान व मराठी साहित्यातील लेखकाचे योगदान लक्षात आणून देणे व तौलनिक आकलन क्षमता वाढविणे
Paper VIII	लोकसाहित्याची मूलतत्वे आणि मराठी लोकसाहित्य	CO1 लोकसाहित्याचे स्वरूप लक्षात घेऊन त्याची व्यापकता व सर्वसमावेशकता लक्षात आणून देणे.
		CO2 लोकसाहित्यतील विविध प्रकार लक्षात आणून संकलन क्षमता वाढविणे.
		CO3 लोकसाहित्यातील सामाजिक, धार्मिक व सांस्कृतिक जाणीवा लक्षात आणून देणे.

Department of History		
M.A. History		
Sem-1	History and its Theory	Co-1The paper is designed to provide adequate conceptual base, bring better understanding of history and its forces.
		Co-2 Help interrogate existing paradigms and challenge the outdated, help in developing critique, help research in terms of formulating hypotheses and develop broad frames of interaction with other social sciences and attain certain level of interdisciplinary
	Evolution of Ideas and Institutions in Ancient India	Co-1.The course intends to provide an understanding of the social, economic and institutional bases of Ancient India
		Co.2 It is based on the premise that an understanding of Ancient Indian History is crucial to understand Indian history as a whole.
	Maratha Polity	Co.1 The purpose of the course is to study the administrative system of the Marathas.
		Co.2The student with the nature of Maratha Polity, to understand basic components of the Maratha administrative structure.
		Co.3Enable the student to understand the basic concepts of the Maratha polity.

	Social Background of Dalit Movement in Maharashtra	Co.1This paper is designed to highlight a relatively neglected part of social history; it is an attempt to provide voice to the history of the oppressed
		Co.2. It defines and provides understanding of various concepts, further explains the caste system and evil practices like untouchability and its rigidification in ancient and medieval times
Sem -2	History and its Practice	C0.1The paper is designed to provide adequate conceptual base, bring better understanding of History and its forces, help interrogate existing paradigms and challenge the outdated, help in
		C0.2 Help in developing critique, help research in terms of formulating hypotheses and develop broad frames of interaction with other social sciences.
	Evolution of Ideas and Institutions in Medieval India	Co.1The course examines the nature of medieval Indian society, economy, state formations, and the main religious currents of the time.
		Co.2It is seen as a continuation of the course on medieval India.
		Co.3It is also seen to be crucial to an understanding of the nature of society, and the problems of the challenge to that society, through colonialism, at a later stage.
	Socio-Economic History of the Marathas	Co.1The purpose of the course is to study socio-economic history of the Marathas.
		Co.2 The student with the components of social structure and their functions, to understand the relationship between religion, caste, customs, traditions, class in 17th and 18th century Maratha Society.
		Co.3 Enable the student to understand aspects of economic life, to trace the determinants of changes in social and economic life.
	Nature of Dalit Movement in Maharashtra	Co.1The paper intends to provide an understanding of the changing position of Dalit at conceptual and practical level of social transformation, from 19th century till today.
		Co.2 This paper also lays emphasis on Ambedkarian Movement, which marks an evolutionary phase in Dalit emancipation.
		Co-3 It highlights the constitutional rights for safeguarding the interests of the oppressed.
		Co-4 It takes into account Dalit literature, which provides space for understanding of Dalit consciousness and adds new dimensions in understanding 'Dalit'.
Part-2 Sem-3	Ancient and Medieval Civilizations of the World	Co-1 The paper intends to examine Ancient and Medieval civilizations with a view to understand, reinterpret and present them in historical perspective.
		C0-2 Enable the student to understand intellectual trends in the modern world; to enable the student to have a better understanding of Indian History in the World context.
	Debates in Indian History	Co-1 The course is designed to introduce the student to some of the issues that have been debated by historians and to introduce some perspectives with reference to Indian History.
	Economic History of Modern India	C0-1 To acquaint the student with structural and conceptual changes in Indian economy after coming of the British.
		C0-2 To make them aware of the exploitative nature of the British rule, to help them understand the process of internalisation by Indians of new economic ideas, principles and practices.
	Maharashtra in the 19th Century	C0-1The purpose of the course is to enable the student to study the history of modern Maharashtra from an analytical perspective
		C0- 2To point out to them the dialectical relationship between continuity and change in Maharashtra; to highlight the ideas, institutions, forces and movements that contributed to the structural changes in Maharashtra.
		Co-3 To help them in articulating their own ideas and views leading to orientation for research; to introduce the student to regional history within abroad national framework.
Sem-4	History of Modern India (1857-1971)	C0-1The purpose of this course is to enable the student to study the history of 'Modern India'
		C0-2 To highlight the ideas, institutions, forces and movements that contributed to the shaping of Indian modernity.
		Co-3 To acquaint the student with various interpretative perspectives; to help them in articulating their own ideas and views leading to research orientation.
	Intellectual History of the Modern West	C0-1The paper is seen as a prerequisite for understanding the concepts that are used in history, both of west Europe and India.
		C0-2 To acquaint the student with the intellectual activity that played an important role in shaping events; the transition from medieval to modern times.
	World after World War II (1945-2000)	Co-1 To acquaint the student with the post-World War II scenario and to enable them to understand contemporary world from the historical perspective.
	History of Maharashtra in the 20th Century	C0-1 The purpose of the course is to enable the student to study the history of modern Maharashtra.
		C0-2The analytical perspective and to highlight the ideas, institutions, forces and movements in 20th century Maharashtra.
		C0-3 It aims to introduce the student to the regional history within a broad national framework.

Political Science		
Part-I Semester -I	Political Theory	CO1. This Course introduces Political Theory as a distinctive area of inquiry that is integral to the study of politics.
		CO2. It highlights contemporary normative debates and places them in a historical perspective.
		CO3. The Course projects the global and interdisciplinary orientation of Political Theory.
		CO4. It also emphasizes the interplay of theory and practice in the political process.
	Public Administration	CO1. This course seeks to help students understand important concepts, approaches and theories of public administration.

		CO2. The course aims to equip students with understanding of the latest developments in the field of Public Administration.
		CO3. The course will be useful for students who seek to understand and analyze broad transformations in the study of public administration in the course of changes in socio-economic and political life.
	Political Institutions in India	CO1. The course introduces the student to the leading institutions of the Indian political system and to the changing nature of these institutions.
		CO2. Apart from explaining the structure and functions of the main institutions the course will try to acquaint students with the idea of institutional balance of power as discussed in the Indian constitution and as developed during the functioning of Indian democracy over the past six decades.
	Modern Political Ideologies	CO1. To understand the difference between ideology and thought as well as between theory and ideology.
		CO2. To understand the relationship between ideas and politics.
		CO3. To understand the core doctrines of each of the ideologies and to make sense of politics through different ideological perspectives.
Semester-II	Public policy	CO1. The purpose of this course is to provide students an understanding of the basic concepts, theories and process of public policy.
		CO2. The course also seeks to help students understand policy processes and actors involved in it by studying specific policies.
		CO3. It attempts to help students understand and analyze policy making in practical context.
	Issues in World Politics	CO1. This course applies the theories and used to illustrate how each level of analysis the international system, the state, and the individual- to help in organizing and conceptualizing the
		CO2. The major issues of the twenty first century- security, economics and transnational issues are presented and analyzed. capabilities to deal with the process of change.
	Comparative Politics	CO1. To understand the trajectory of the sub-discipline
		CO2. To understand the significance of the comparative methodology
		CO3. To understand the dynamics of domestic politics across the countries
	Human Rights	CO1.This course is aimed at introducing the basic idea of Human rights, equip the student with an ability to distinguish between human rights, fundamental rights and also between individual rights and group rights
		CO2. The course operates at two levels: it discusses human rights in the context of global political order and secondly, discusses the implementation of human rights in the context of rights movements in India.
Part-II Semester-III	Political Thinking in Modern India	CO1. The course introduces the student to the key ideas of political thinking in modern India as it shaped in the colonial context.
		CO2. The course is woven around ideas/ issues and not around individual thinkers.
		CO3. Students will be encouraged to understand and decipher the diverse and often contesting ways in which ideas of nationalism, democracy and social transformation were discussed by leading Indian thinkers.
	Political Sociology	CO1. This Course will introduce the overall scope of the sub-discipline of political sociology.
		CO2. The focus of the course will be on the political sociology of power.
		CO3.The emphasis is on the nature of power in modern societies—more in the form of organizations and social formations than as individual power.
		CO4.Students are also expected to understand different forms of justifications of power and the role of ideology in this regard.
		CO5.State will be studied as a repository of power in society while class and patriarchy are two instances of how the nature of power is shaped by social factors.
	Theory of International Relations	CO1.This course introduces the students to the evolution and important theories.
		CO2. Students need a brief history of international politics to understand why we study the subject and how current scholarship is informed by what preceded it.
		CO3. Theories provide interpretative frameworks for understanding what is happening in the world and the levels of analysis. Competing theories are presented.
	Indian Administration	CO1.The purpose of this course is to provide students with broad understanding of key dimensions of Indian Administration functioning at different levels.
		CO2. The objective of the course is to help students to understand and analyze the administrative reforms introduced recently to make administration people-centric and to what extent that goal has been realized.
Part-II Semester-IV	TRADITIONS OF POLITICAL THOUGHT	CO1.This Course is meant to serve as a window on the major traditions of thought that have shaped political discourse in different parts of the world over the last three millennia
		CO2.It stresses the great diversity of social contexts and philosophical visions that have informed the ideas of key political thinkers across epochs.
		CO3.The chief objective is to project the history of political thought as a series of critical, interconnected and open-ended conversations about the ends and means of the good life.
	POLITICAL PROCESS IN INDIA	CO1.The course will introduce to the student the key issues and details of the political process in post independence India.
		CO2.It will also try to develop among students a perspective to understand and analyse Indian politics.

		CO3.The aim is to help students understand the expansive meaning of political process as it shapes in the arena of electoral and party politics, in the form of mass mobilizations and as politics of interests.
	POLITICAL PARTICIPATION	CO1.This course is a continuation of the study of power. Political action is seen as integrally related to search for and justifications of power.
		CO2.Political socialization is the process that shapes the durable set of attitudes and beliefs
		CO3.The course expects that students will go beyond the study of routine participation and understand the relevance of collective action in the form of social movements and/or collective violence.
	PARTY SYSTEM IN INDIA	CO1.The course introduces students to the nature of party system in India and to the functioning of main political parties operating in the system.
		CO2.The course will also acquaint students with analytical perspectives on party politics in India.

Course Outcomes (Cos) of Master of Commerce (M.Com.)		
Department of Commerce (M.Com)		
Class	Course	Courseoutcomes
M.Com I Sem I	Management Account	CO1 Acquiring sound Knowledge of concepts, methods and techniques of management accounting and to make the students develop competence with their usage in managerial
	Strategic Management (102)	CO1 Enable the students to develop an understanding of the basic inputs in making andimplementing corporate strategic decisions.
		CO2 To familiarize the students with the issues and practices involved in corporate decisions.
	Advance Accounting & Taxation	CO1 To lay a theoretical foundation of Accounting and Accounting Standards.
		CO2 To lay a theoretical foundation of Accounting and Accounting Standards.
	Income Tax (104)	CO1 To gain knowledge of the provisions of Income - tax including Rules pertaining there to,
		CO2 To develop ability to calculate taxable Income of 'Individual', 'Hindu Undivided Family' and 'Firm' assesses.
	Legal Framework of Banking (109)	CO1 To acquaint the students with legal framework in which the Indian banking is working today.
		CO2 To make the students aware about the latest developments in the field of banking law.
		CO3 To enable the students to understand modem banking practices.
		CO4 To enable the students to establish a link between the legal provisions and the practical aspects of banking.
	Central Banking (116)	CO1 To study the functions of central bank
		CO2 Understanding monetary policy and its instruments
Sem. II	Financial Analysis & Control (201)	CO1 Acquiring sound Knowledge of concepts, methods and techniques of management accounting and to make the students develop competence with their usage in managerial
	Industrial Economics (202 A)	CO1 To study the basic concepts of Industrial Economics.
		CO2 To study the significance and problems of Industrialization.
		CO3 To study the impact of Industrialization on Indian Economy.
	Specialized Areas in Accounting (203)	CO1 Development of competency of students to solve problems relating Special areas in accountingincluding accounting for Services Sector
		CO2 Understanding of Financial Reporting Practices.
		CO3 Familiarize the student with procedure of accounting for Taxation.
	Business Tax Assessment & Planning (204)	CO1 Provide understanding of Direct Taxes including Rules pertaining thereto and their application to different business situations.
		CO2 Understanding principles underlying the Service Tax.
		CO3 Understanding basic concepts of VAT, Excise Duty and Customs Duty.
	Banking law & Practices III (215)	
	Monitory policy IV (216)	
M Com II Sem III	Business Finance (301)	CO1 To enable students to acquire sound knowledge of concepts, nature and structure of businessfinance.
	Research Methodology for business (302)	CO1 To acquaint the students with the areas of Business Research Activities.
		CO2 To enhance capabilities of students to conduct the research in the field of business and socialsciences.
		CO3 To enable students, in developing the most appropriate methodology for their research studies.
	Advance Auditing	CO1 To impart knowledge and develop understanding of methods of auditing and their
		application.
	Specialized Area in Auditing	CO 1 Imparting knowledge and develop understanding of methods of audit in Specialized areas.
	Foreign Exchange (315)	CO1 To provide an understanding of various aspects of foreign exchange market.
		CO2 To acquaint the students with financing of foreign trade.
		CO3 To provide an understanding of exchange rate mechanism and factors affecting exchange rates.
		CO4 To make students aware of development in foreign exchange market.
	International Finance	CO1 To Provide understanding of International Financial market.
		CO2 To acquaint the students with International monetary system
		CO3 To Provide understanding of operations of international Financial Institutions

Sem IV	Capital Market & Financial Services. (401)	CO1 To enable students to acquire sound knowledge, concept and structure of capital marketand financial services.
	Industrial Economics Environment (402 A)	CO1 To study the basic concepts of Industrial Finance.
		CO2 To study the effects of New Economic Policy.
		CO3 To study the impact of Labor reforms on Industries.
	Recent Advance in Accounting, Taxation & Auditing. (403)	CO1 To up-date the students with latest developments in the Subject
		CO2To inculcate the habit of referring to various periodicals and publications in the given subject,apart from text books and reference books
		CO3 To develop the ability to read, understand, interpret and Summarize various articles fromnewspapers, journals etc.
	Project Work (Advance Banking and Finance) Recent Advance in Banking & Finance in India	CO1 To enable students understand new developments in banking industry.
		CO2 To keep the students abreast with the innovative practices introduced in day to day banking.
	Project Work (Advance Account) Recent Advance in Accounting and Taxation	CO1 Provide knowledge to the Students about fundamental concept with an understanding of income tax system.
		CO2 Research analysis and evaluate income tax information and issues.
		CO3 Apply critical thinking and problem solving skill to resolve income tax issues.

Course Outcomes (Cos) of Master of Science (M.Sc.)		
Department of Chemistry		
Master of Science (M.Sc) Organic Chemistry		
M.Sc I Semester- I	Fundamentals of Physical Chemistry-I CHP-110	CO1. Apply mathematical tools to calculate thermodynamic and kinetic properties.
		CO2. Understand the thermodynamic description of mixtures state function, exact, inexact differential.
		CO3. To understand first law of thermodynamics
		CO4. Know changes of state.
		CO5. Understand physical transformation of simple mixture.
		CO6. Understand the quantum chemistry.
		Co7: To know chemical kinetics and reaction kinetics.
	CHI-130 Inorganic Chemistry	CO1. Understand the details of molecular symmetry including symmetry elements, operations and symmetry point groups.
		CO2. Use of group theory to recognize and assign symmetry characteristics to molecules.
		CO3.Understand the mathematical basics needed for group theory, including matrices, reduction formula, reducible and irreducible representations.
		CO4. Apply group theory in valence bond theory treatment of structure and bonding.
		CO5. Apply group theory in molecular orbital theory treatment of bonding and structure.
		CO6. Apply group theory to predicting concerted organic reactions.
		CO7. Explains the trends in atomic and physical properties of group elements.
		CO8.Understand the concept of vibrational modes.
		CO9.Able to known phenomenon of symmetry and its importance.
		CO10. To understand chemistry of main group elements.
	CHO- 150 Basic Organic Chemistry	CO1. Predict the reactivity of an organic compound from its structure.
		CO2. Assign configurations to relevant stereochemical elements in molecular structures and predict stereochemical outcomes in organic reactions.
		CO3. Identify the stereocenters in a molecule and assign the configuration as R or S.
		CO4. Describe synthetically the processes relevant organic-chemical reactions and be able to discuss the mechanism of these reactions.
		CO5. Know the different aromatic substitution processes and their application to heteroaromatic systems.
		CO6. Develop basic skills for the multi-step synthesis of organic compounds.
		CO7. Understand the elimination reaction.
	CHA- 190 General Chemistry	CO1.Demonstrate safe handling of chemicals and equipment in the laboratory.
		CO2.Demonstrate knowledge of Good Laboratory Practices, Good Manufacturing Practices and Fire Safety.
		CO3.Define the principles involved in analytical chemistry.
		CO4. Apply suitable method of analysis for a given analytical determination.
		CO5. Describe the fundamentals of separation techniques.
Semester -II	CHP-210 Fundamentals of Physical Chemistry	CO1. Indicate the properties of an atomic nucleus that make it unstable and undergo nuclear decay.
		CO2. Explain the methods to detect various types of ionizing radiation.
		CO3. Discuss the methods behind nuclear instrumentation for detection of ionizing radiation.
		CO4. Understand the use of radiotracer technique in the laboratory.
		CO5.Students learn about the Indians nuclear energy programme.
		CO6 Explain spectra and relate the observations to electronic, molecular and dynamic processes occurring in the samples.
		CO7.Able to account for spectroscopic methods in different energy intervals.
		CO8.Interpret the basic processes associated with molecular phenomena.
		CO9.Use optical spectroscopy to study the structure and orientation of molecules adsorbed on surfaces.
		CO10.Justify the difference in intensity between Stokes and anti-Stokes lines.

		CO11.Understand the molecular spectroscopy: I.R, Raman, electronic and Mossbauer and its application.
	CHI-230 Coordination and Bioinorganic Chemistry	CO1.Understand the fundamental principles of main group organometallic chemistry.
		CO2.Able to use Crystal Field Theory to understand the magnetic properties of coordination compounds.
		CO3.Able to describe the stability of metal complexes by the use of formation constants .
		CO4.Able to recognize the types of isomers in coordination compounds.
		CO5.Familiarization with some applications of coordination compounds.
		CO6.Understand how metal ions interact with biological environments and how these interaction influences the properties of metal centers.
		CO7.Apply principles of coordination chemistry to explain how nature tailors properties of metal centers for specific applications.
	CHO-250 Synthetic Organic Chemistry and Spectroscopy	CO1. Know the basic mechanism of oxidation in organic compounds.
		CO2. Acquire knowledge about the reagents which causes oxidation in various compounds
		CO3. Know the reagents that causes selective and complete reduction
		CO4.Interpret 1H NMR, 13C NMR, IR, UV, and mass spectra and use these data to determine the structure of organic molecules.
		CO5. Predict the relative energies of reactive intermediates such as radicals, carbocations, and carbanions, based on structural considerations such as orbital hybridization, hyperconjugation, and resonance stabilization.
		CO6.Describe stereochemical problems in relation to chemical transformations.
		CO7. Correlate the chemical structure of biomolecules to reactivity: Functional groups, acid-base properties, Biochemical as well as synthetic routes.
		CO8. Describe different approaches to the formation of carbanions; discuss their structures, Stabilities/reactivates and applications in synthesis.
		CO9. Student should be able to plan syntheses using carbanions
	CHA-290 General Chemistry	CO1. Able to explain the principles of the most important liquid and gas chromatography as well as electro-migration techniques;
		CO2. Able to understand principles and their practical application in publications describing chromatography or electro-migration techniques;
		CO3. Describe in detail the principles governing chromatographic separations.
		CO4. To know organ metallic chemistry.
		CO5. To understand organ metallic reaction and catalysis.
		CO6. To know the coordination compound and its reaction mechanism.
	CHP-107 Physical Chemistry Practical's	CO1. Apply the research-based knowledge for various instrumental applications
		CO2. Understand the principles and working of Potentiometer and determine stability constant of a complex ion by potentiometry.
		CO3.Determine concentration of unknown solutions and degree of hydrolysis and hydrolysis constant by pH-Metry.
		CO4. Use Dilatometer for kinetic study.
		CO5. Determine specific rotation and percentage of two optically active substances by polarimetrically.
		CO6. Apply statistical treatment for experimental data.
	CHI-127 Inorganic Chemistry Practical's	CO1. Perform gravimetric and volumetric analysis for ores and alloy.
		CO2. Analyze binary mixtures by gravimetric and volumetric method.
		CO3. Synthesize the metal complexes and find out the percentage purity.
		CO4. Understand and Perform ion exchange chromatographic technique for separation of metal ion.
		CO5. Synthesize and characterize nanoparticles by different analytical techniques.
		CO6. Apply Conductometeric method for verification of Debye Huckle theory.
	CHO-247 Organic Chemistry Practical's	CO1. Know uses of chemistry software's like MOPAC, ISIS draw, Chem office.
		CO2. Understand and demonstrate different purification techniques.
		CO3. Perform thin layer chromatography technique for completion of reaction.
		CO4. Perform single stage preparation.
		CO5. Apply knowledge of Green principle for organic synthesis.
		CO6. Apply Microscale Techniques for the separation of three component mixture using ether.
M.Sc II Semester- III	CHO-350: Organic Reaction Mechanism	CO1: To predict the formation, stability and related name reactions
		CO2: Describe different approaches of formation and applications of Enamines.
		CO3: To understand Neighbouring group atom and its involvement in the reaction.
		CO4: To understand Reactions of carbenes and nitrenes
		CO5: Understand the details of synthesis, reactions and applications of free radicals.
		CO6: Acquired Knowledge Regarding Mechanisms In Biological Chemistry
	CHO-351: Spectroscopic Methods in Structure Determination	CO1: Interpret 1H NMR, chemical shift, factor influencing chemical shift, NOE.
		CO2: Determine the structure of organic molecule by using C^{13} NMR spectroscopy
		CO3: General idea about two dimensional NMR spectroscopy
		CO4: To understand Instrumentation, methods of ionization, detectors of MS.
		CO5: To solve Problems based on joint application of UV, IR, PMR, CMR, and Mass.
	CHO-352: Organic Stereochemistry	CO1: Describe Stereochemistry of six membered rings.
		CO2: To understand Stereochemistry of rings other than six membered
		CO3: Able to explain Fused Bridged and caged rings
		CO4: Resolution of racemic modification

		CO5: To recognized Geometrical Isomerism and Stereochemistry of olefins.
		CO6: To determination of stereochemistry organic compounds using NMR.
	CHO-353: Photochemistry, Pericyclic Reactions and Heterocyclic Chemistry	CO1: To understand basic principal of Photochemistry and Application of photochemical reactions in synthesis
		CO2: Describe detail understanding of Pericyclic reaction and its application.
		CO3: Able to recognized Hetrocyclic compounds and its reactions.
Semester- IV	CHO–450 Chemistry of Natural Products	CO1: Able to understand Structure and stereochemistry of Hardwickiic acid, Camptothecin and podophyllotoxin
		CO2: To recognized Synthesis of Taxol, Estrone and Mifepristone, Fredericamycin -A
		CO3: Describe the biogenesis of alkaloids, terpenoids and shikimic acid pathway.
	CHO-451: Advanced Synthetic Organic Chemistry	CO1: Understand the fundamental principles and reactions of transition metal complex.
		CO2: Develop basic skill for the C=C bond formation reactions.
		CO3: Acquired knowledge of MCR.
		CO4: Apply various methods for the formation of ring compound.
		CO5: To understand the click chemistry.
		CO6: Know the Metathesis reaction.
		CO7: Predict the reactivity of Boron and Silicon in organic synthesis
		CO8: To develop basic skill about important reactions.
	CHO-452: Carbohydrate and Chiron approach, Chiral Drugs and Medicinal Chemistry	CO1: Know the basic reactions and stereochemistry of Carbohydrates
		CO2: Differentiate the chiral and achiral molecules.
		CO3: To gain information about chiral drugs.
		CO4: Familiarization with some applications of Medicinal Chemistry.
	CHO-453: Designing Organic Synthesis and Asymmetric Synthesis	CO1: Understand the concept of designing organic synthesis.
		CO2: To understand Principles and applications of asymmetric synthesis
	CHO-347: Single stage preparations	CO1. Understand and use Micro scale techniques
		CO2. Prepare various organic compounds.
		CO3. Apply the crystallization technique for purification of compounds
		CO4: Isolation of Natural Product
		CO5: Use of Soxhlet extraction technique.
		CO6: Use of steam distillation method.
	CHO-447: Two stage preparations	CO1: Perform two stage preparation.
		CO2. Perform thin layer chromatography technique for completion of reaction.
		CO3. Apply knowledge of Green principle for organic synthesis.
		CO4: Apply platform of single and two stage preperations.
	CHO-448: Project/Industrial training/Green Chemistry and Chemical biology experiments	CO1. Search the Literature survey for the project
		CO2. Use analytical instrumental to carry out the project
		CO3. Develops an aptitude for doing research.
		CO3. Team work gives more innovative ideas.
		CO4. Handle analytical instruments neatly for analysis and discuss their experiment results.
		CO5. Know specification of instrumental techniques and interpretation data.
		CO6. Write project reports and Power point presentation using ICT tools
		CO7. Students express their creativity and develop higher order thinking skills.

Department of Geography		
MA-I	Course	Course Outcomes
Sem.-I	Gg:101 Principles of Geomorphology	CO.1 To study of the History of Geomorphology as well as Process of Geomorphology-Endogenic Forces & Exogenic Forces.
		CO.2 To understand the interior of the earth.
		CO. 3To understands the basic theories on origin of continent, movement of landmass and origin of the ocean basin.
		CO.4 Study of the mechanics of various environmental factors such as River, Glacier Wind, Wave and study of their landforms.
	Gg:102 Principles of Climatology	CO.1 Understand the basic concepts of Climatology Such as Weather, Climate, Climatology and Meteorology.
		CO.2 understands the composition of atmosphere, vertical structure of the atmosphere.
		CO.3 understands the Circulation of the Atmosphere, Models of General circulation
	Gg:103 Principles of Eco. Geography	CO.1 understands the recent trends in eco. geography
		CO.2 Study of the economic landscape-Historical evolution of homestead, tribal and village economy
		CO.3 study of various models of Location of economic activity.
	Gg:104 Principles of Popn. & Settle. Geography	CO.1 Study of the evolution of population & settlement geography
		CO.2study of man-environment relationship.
		CO.3 study of various theories of Population Growth.
	Gg:106 Practical's in Human Geo.	CO.1 Introduce to various agriculture production analysis techniques and their application in agriculture geography.
		CO.2 Introduce to population data analysis techniques and their application in population geography.
	Gg:105 Practical's in Physical Geo.	CO.1 To study of Basin relief analysis it include find out slope of earth surface.
Sem.-II	Gg: 201 Quantitative Techniques in Geography	CO.1 To study of various statistical techniques to analysis of geographical data.
		CO.2 to study of Bivariate analysis it includes Correlation and Regression equation.

		CO.3 To study of inferential statistics and testing hypothesis.
	Gg:212 Agriculture Geography	CO.1 introduction to modern agriculture techniques and their application in agriculture Geography.
		CO.2 capable to the students applying previous knowledge in problems and prospects in agriculture
	Gg: 222 Industrial Geography	CO.1 Introduction to the basic concepts and theories of industrial location and their application in various fields of economic geography.
		CO.2 To study of industrial lacational factors and their application in industrial development.
		CO.3 to study of industrial region of foreign country and India.
	Gg: 205 Geography of Disaster Management	CO.1 Introduction to the basic concepts of Disasters and apply knowledge of this course in disaster management preparedness and mitigation.
	Gg:202 Practicals in Cartography	CO.1To Understand Data representation by various techniques and construct projection and their use.
	Gg:203 Practicals in Surveying	CO.1To understands various types of surveying and its use in find out the slope of earth surface of surveyed field.
	Gg: 207 Practicals in Terrain Analysis	CO.1To understand the spatial terrain analysis preparation of elevation map of the area
	Gg: 208 Geoinformatics - I	CO.1 Use of GIS and its application in various fields of geography.
	Gg: 209 Geoinformatics - II	CO.1 Use of Remote Sensing (RS) and its application in various fields of geography.
MA-II		
Sem.-III	Gg: 301 Geography of India with Sp. Ref. to MH.	CO.1 students apply about this subject knowledge in identify Topography of the earth surface, drainage system of nation and state etc.
	Gg: 302 Interpretation of Top. Maps and Village Survey	CO.1 To study of Topographical Map of SOI, OS. and students interpret the topography of earth surface and drainage, occupation vegetation in this map etc.
	303 Research Method in Geography	CO.1 Understand the interpret the aerial photographs and satellite image, SOI Toposheets, use of GIS and how to done Field work?.
	Gg: 306 Geoinformatics -III	CO.1To understand Data analysis and Digital Image processing
	Gg: 307 Practicals in Geoinformatics	CO.1To understands in practically Data analysis and Digital Image processing on software base.
	Gg: 312 Trade and Transport Geography	CO.1 to study basic concepts and role of trade in world and regional level and mode of transportation,
	Gg: 321 Political Geography	CO.1 Understand the basic concepts related to political geography and Global Geo- Strategic View.
	Gg: 332 Practical's in Economic Geography	Co.1 Understand the agriculture techniques and industrial techniques of various scientist.
Sem-IV	Gg: 401 Theoretical and Applied Geography	CO.1 To understand Ancient period geographer contribution to Modern geographer contribution in various field of science.
	Gg: 402 Principles of Remote Sensing and GIS	CO.1 To understand use of RS and GIS in Geographical Data Analysis.
	Gg: 403 Practical's in Remote Sensing and GIS	CO.1 To understand interpretation of Aerial Photographs , satellite image and GIS Analysis.
	Gg: 404 Geography of Food Security of India	CO.1 To understand basic concepts of food security and importance and availability of food for masses.
	Gg: 405 Geography of Health	CO.1 To understand basic concepts of Health , Classification of Diseases and Significance of primary health care centers
	Gg: 407 Regional Geography of SAARC Countries	CO.1 Regional study of SAARC Countries.
	Gg: 424 Natural and Manmade Hazards	CO.1To understands the Natural and Manmade Hazards. Students apply previous knowledge for Disaster Management and Measures.
	Gg: 441 Principles of Regional Geography and Project Work	CO.1 To study of regional planning and theoretical structure planning theories for regional development.

Department of Zoology		
Class	Subjects	Topics
M. Sc. I		
SEM. – I Theory	ZY 101 T: Biochemistry - I	CO1.Study the Water Structure and Function, pH and Buffers, Biological Buffer System.
		CO2. Study of the Carbohydrates with Classification and Biological Significance.
		CO3.Discuss the Lipids and their Classification and Regulation.
		CO4. Study of the Vitamins and their Classification, significance
		CO5. Explain the Amino acids: Classification, properties and reactions .
		CO6. Study of the Proteins with structures and Classification of Amino acids.
		CO7.Describe the EnZYmes their Classification and Regulation.
	ZY 102 T: Cell Biology	CO1.Study of the concepts of cell Biology.
		CO2.Study of overview of chemical nature of cell.
		CO3.Study of Plasma membrane Structure and function, Location of Intrinsic and extrinsic proteins and channels.
		CO4.Study of Endomembrane system, protein trafficking
		CO5.Study of Mitochondria and chloroplast- Structure, Genetic system, Functions; protein import.
		CO6. Study of significance of cell and its molecular activities.
		CO7. Detail study of cell cycle with their regulation.

		CO8.Explain the Cytoskeleton their types and role
	ZY 103 T: Genetics	CO1.Study of fundamental of Genetics ,Mendalian ratios and modification Mendalian ratios.
		CO2.Study of Classical concept of a gene.
		CO3.Study of concept of Linkage and crossing over.
		CO4.Study of Inheritance of qualitative and quantitative trait.
		CO5.Study of Principles of Population Genetics.
		CO6.Study of Organization and regulation of lac and arabinose operons.
		CO7.Study of . Somatic cell genetics and its applications.
		CO8.Study of Human genetics.
	ZY 104 T :Biostatistics	CO1.Study of Applications and Uses of Statistics .
		CO2. Concept of Data Classification.
		CO3.To understand the Measures of central tendency.
		CO4.To study of Measures of dispersion.
		CO5. Detail study of Correlation and Regression.
		CO6.Study of Probability and probability distribution.
		CO7. Test of hypothesis
	ZY 105 T : Skill In Scientific Communication And Writing	CO1.Study of common error in written and spoken presentation.
		CO2. Understand the Organization of English language.
		CO3.To know Common error in written and spoken presentation.
		CO4.Discuss the Oral presentation.
		CO5.Study the Hypothesis, theory and concept.
		CO6. Discuss the Genetic code as a simple language.
		CO7. Describe the Outline of a science paper and project preparation, funding.
		CO8.Explain the Survey of literature, defining the problem and justification.
		CO9.Discuss the Materials and Methods.
		CO10.Describe the Observations and Results.
		CO11.Concept of discussion.
		CO12. How to find references from journals, books and data bases, styles of citations.
		CO13.Discuss the Summary , Abstract, acknowledgements and Title designing.
		CO14.To understand the concept of Editing & correcting.
	ZY 106 T: Freshwater Zoology	CO1.Study of types of Aquatic environment.
		CO2.Discuss the physical conditions of water.
		CO3.Discuss the Chemical conditions of water
		CO4.Describe the physiological and protective adaptations of the Protozoa, Rotifera, Crustaceans, Fishes.
		CO5.Explain the diagnostic features and life cycle of temporary rainwater pool animals
		CO6. Discuss the respiratory and locomotory adaptations in freshwater insects and their larvae
		CO7.To study general life cycle of frog.
		CO8.Explain the adaptations in freshwater reptiles.
		CO9.Discuss the economic importance of freshwater molluscs
		CO10. Biological changes in freshwater due to sewage pollution
SEM. – II Theory	ZY 201 T: Biochemistry -II	CO1. Study of basic law of thermodynamics and structure and function of ATP.
		CO2. Understand the Concepts of metabolism, Metabolic pathways-Catabolic and anabolic.
		CO3. Detailed study of glycolysis ,energetic and its regulation; PFK, gluconeogenesis.
		CO4.Discuss the Carbohydrate metabolisms and Role of enzymes in synthesis and degradation of glycogen.
		CO5.Explian the Citric acid cycle ,regulation and significance, Role of PDH.
		CO6.Describe the electron transport chain and oxidative phosphorylation.
		CO7.Study of purine and pyrimidine degradation, biosynthesis of purine and pyrimidine nucleotides.
		CO8.Understand the concept of lipid metabolism.
	ZY202 T: Molecular Biology	CO1.Discuss the DNA structure and topology.
		CO2.Study of physical properties of DNA.
		CO3.Describe the genome organization ,Types of RNA and their significance.
		CO4.Explain the DNA Replication.
		CO5.Understand the DNA damage and repair.
		CO6.Study of transcriptional and unit in prokaryotes and eukaryotes.
		CO7.Describe the protein synthesis.
		CO8.Detailed study of mobile DNA elements.
	ZY 203 T: Developmental Biology	CO1.Understand the basic concepts of Developmental Biology.
		CO2.Discuss the introduction of gametogenesis, regulation of sperm motility , role of pH and divalent cation
		CO3.Study of oogenesis, synthesis and storage of maternal transcripts.
		CO4.Understand the concept of fertilization.
		CO5.Explain the types of eggs and cleavage patterns.
		CO6.Detailed study of egg actvation, regulation of cell cycle and utilization of maternal macromolecules .
		CO7.Discuss the Organizers: Role of Spemann's organizers in frog and Hensen's node in birds.
		CO8.Detailed study of mesoderm induction in Xenopus.
		CO9.Study of pattern formation in Drosophila.
		CO10.Discuss the neural competence and molecular signaling during neural induction.

		CO11.Understand the Concept of growth, differential cell proliferation, shaping of organ primordia .
		CO12.Describe the growth and post embryonic development.
	ZY 204 T: Endocrinology	CO1.Study of hormones as chemical messenger, structure of hormones.
		CO3.Explain the hormone receptors; on the plasma membrane, cytoplasm & nucleus.
		CO4.Discuss the mechanism of hormone action- signal transduction cascade.
		CO5.Understand the hypothalamic hypophysiotropins.
		CO6.Detailed study of adenohypophysialhormones ACTH, PRL, STH and TSH.
		CO7.Discuss the Control of chromatophores,Pituitary, pineal.
		CO8.Study of hormonal regulation of carbohydrates, protein & lipid metabolism.
		CO9.Explain the osmoregulatoryhormones ADH, mineralcorticoids, renin-angiotensin.
		CO10.Study of gastrointestinal hormones.
		CO11.Understand the control of calcium and phosphate metabolism.
		CO12.Describe the endocrine mechanism in crustacean.
		CO13. Study of hormones and reproduction in echinoderms
		CO14. Study of hormone regulation in insect larval development and metamorphosis
	ZY 205 T: Comparative Animal Physiology	CO1. Study of Physiology of digestion.
		CO2.Study of types of respiration pulmonary and tissue, transport of oxygen and carbon dioxide , RQ.
		CO3.Describe the muscle contraction.
		CO4.Discuss the Osmotic regulation
		CO5.Detailed study of excretion, its physiology ,role of ADH and significance of renal failure and dialysis.
		CO6.Explain the temperature and mechanism of thermoregulation in homeotherms.
		CO7.Discuss the Chemical Communication.
		CO8.Detailed study of Sense organ.
	ZY 206 T: Ichthyology	CO1.Discuss the Classification and diagnostic characters of extant Cyclostomata, Chondrichthyes and Osteichthy
		CO2.Explain the phylogeny of fishes.
		CO3.Study of External morphology, body form, appendages, pigmentation, skin and scales.
		CO4.Describe the endoskeleton: Skull, axial and appendicular skeleton.
		CO5.Detailed study of food and feeding habits, digestive system and its anatomical modifications.
		CO6.Understand the study of Structure and functions of gills; adaptations for air breathing.
		CO7.Explain the buoyancy mechanisms: Role of fat and swim bladder.
		CO8.Study of excretion and Osmoregulation.
		CO9.Discuss the catadromous and anadromous fishes.
		CO10.Detailed study of reproduction,Structure of gonads, gametogenic cycles; spawning, Parental care.
		CO11.Understand the study of nervous system and sense organs
		CO12.Describe the endocrine organs: Functions of the pituitary, thyroid, inter-renal and chromaffin tissue.
SEM. – I Practicals	ZY 101 P: Practicals In Biochemistry -I	CO1. Understand the study of Acid & Alkali solutions and acid-base titration
		CO2. To prepare Buffers of known pH and molarity and measurement of pH of various samples, Buffering capacity
		CO3. Perform the alpha amino nitrogen by formal titration.
		CO4. To find saponification value of a given fat.
		CO5. Perform Inorganic Phosphate
		CO6. Apply knowledge of Sugar (Glucose) by Folin Wu method
		CO7. Estimation of Amino Acid (Tyrosine)
		CO8. Understand and perform proteins by salting out / by adjusting isoelectric point
		CO9. Estimation of vitamin
		CO.10 Understand and perform amylase/ invertase, to find specific activity and progress curve
		CO.11 . Perform the protein by Lowry et.al method.
	ZY 102 P: Practicals In Cell Biology	CO1. Understand and perform measurements of cell size using light microscope
		CO2. Perform the temporary preparation of human epithelial cheek cell
		CO3. Study of different stages of mitosis in suitable material and mitotic index
		CO4. Study of meiosis in Grasshopper testes, Onion flower buds ,Aloe vera with emphasis on all stage of prophase
		CO5. Perform the limits of cleanliness
		CO6. Cell fractionation- Nuclei, mitochondria observation, nuclear count.
		CO7. Study of Cyclosis in Paramoecium
		CO8. Study of Ultra structure of cell organelles.
		CO9. Study of different types of Cells.
		CO10. Study of disaggregation and reaggregation in sponge cells and effect of toxicant or cytochalasin ,pesticideendosulfan , CuSO4 or toxicant .
		CO11. Study of metaphase spreads from bone marrow of rat / mouse
	ZY 103 P: Practicals In Genetics	CO1. Study of sex linked inheritance in Drosophila sp.
		CO2. Study of monohybrid ratio in Drosophila sp.
		CO3. Study of dihybrid ratio in Drosophila sp.
		CO4. Understand the Non-allelic gene interaction in Drosophila sp.

		CO5. Linkage study in Drosophila sp.
		CO6. Determination of gene distances and gene order for a given three point test cross
		CO7. Perform the Polytene chromosomes of Drosophila or Chironomous-examination of puff and bands
		CO8. Estimation of allelic frequencies, heteroZYgote frequencies in human populations
		CO9. Human Mendelian traits family studies. Estimation of gene frequencies &persentage of heteroZYgotes for the given data.
		CO10.Detaile study of pedigree Analysis: Sex-Linked, Autosomal dominant and recessive.
		CO11. Analysis of quantitative trait in a plant/ animal.: frequency distribution .
		CO12. Analysis of quantitative trait in a plant/ animal.: standard deviation variance
		CO13. Study of microbial Genetics: Basic methodology; colony counts, growth curve .
		CO14.Perform the bacterial transformation- antibiotic resistance marker
	ZY 104 P - Biostatistics	CO1. Construction of frequency distribution and its graphical representation.
		CO2. Measures of Central Tendency.
		CO3. Measures of Dispersion.
		CO4. Correlation and Regression
		CO5. Computation and application of binomial & Poisson probabilities.
		CO6. Computation and application of normal probabilities.
		CO7. Test for means and proportions.
		CO8. Chi-square test of goodness of fit.
		CO9. Paired and unpaired t- test, F-test.
		CO10. Statistical analysis with Computer software packages.
	ZY 105 P: Practicals In SSCW	CO1.Study of English vocabulary, word formation, basic grammar-verb, adverb, adjective, noun, pronoun .
		CO2. Syntax, paraphrasing and précis writing, synonyms, antonyms, abbreviations
		CO3. Understand the study of Spoken English: pronunciation, diphthong, accent, clarity, speed, punctuation.
		CO4. Common errors in written and spoken presentation- Tautology, double negatives and double positives, sequence and tenses, ambiguity, spellings, jargons.
		CO5. Discuss the Outline of a scientific paper; preparation of a project and writing Introduction.
		CO6. Writing abstracts, conclusion/ summary and acknowledgements, key words .
		CO7. To suggest a title to the given abstract/paper
		CO8. Assigning legends to given graphs, figures and captions to given tables, Deciphering the given pictorals.
		CO9. Study of proof correction symbols; proof- reading the given text & correcting the proofs.
		CO10. Designing of tables and graphs from the given data,
		CO11. Study of How to write materials and methods ,observation section of a research paper
		CO12. Write discussion section for the given discussionless research paper
		CO13.Find out Citations/ Bibliography: how to find and cite references from journals, books and databases`
		CO14.Detail study of Oral presentation: Rhythm, style, control,mock presentation for 10 minutes
		CO15. Use of animation in scientific communication
	ZY 106 P: Practicals In Fresh Water Zoology	CO1.A qualitative and quantitative analysis of zooplankton from a given sample of water using Sedgwick rafter cell
		CO2. To prepare and maintain a culture of paramecium, Daphnia and Hydra.
		CO3. Study of aquatic and semiaquatic adaptations in amphibians and reptiles.
		CO4. Study of locomotory and respiratory adaptations in aquatic insects and their larvae.
		CO5. Estimation of Chlorides in given sample of water.
		CO6. Identification of commercially important freshwater fishes and crustaceans
		CO7. . Study if Bioindicators of pollution by insects, rotifers, algae, diatoms.
		CO8. Determinations of LC50 using fish/insect larvae for known pollutant like Heavy metal/any Pesticide/industrial effluent.
		CO9. Water analysis with regadrs to hardness (Total and Calcium).
		CO10. Visit to freshwater body for the study of aquatic ecosystem.
		CO11. Collection and identification of Benthos.
		CO12. Compulsory Visit to ZSI, Pune and water purification plant and submission of tour report.
SEM. – II Practicals	ZY 201 P: Practicals In Biochemistry Ii	CO1. Units and specific activity of enZYmes.
		CO2. Study the effect of substrate concentration on enZYme activity
		CO3. Effect of pH and temperature on enZYme activity.
		CO4.Understand and perform the effect of inhibitor and activator on enZYme activity.
		CO5. Study of Colorimetry and spectrophotometry
		CO6. Estimation of cholesterol
		CO7. Separation sugars by paper chromatography
		CO8. Estimation of uric acid in Lizard excreta/ Human blood etc.
		CO9. To find absorption spectrum of haemoglobin, BSA, Tyrosine
		CO10. Estimation of Nitrogenous Base (Guanine)

		CO11. Estimation of free aminoacids by Ninhydrin method.
		CO12. Estimation of Starch
		CO13. Separation of amino acids by TLC
	ZY 202 P: Practicals In Molecular Biology	CO1.Perform the isolation of bacterial DNA and estimation by UV spectrophotometry
		CO2. Absorption studies of isolated DNA.
		CO3.Perform the isolation of Liver DNA and quantification by Agarose gel electrophoresis
		CO4. Understand and perform isolation of RNA and agarose gel electrophoresis .
		CO5. Demonstration of plasmid DNA in E. coli. and its characterization by UVspectrophotometry
		CO6. Concept of biological database, gene and protein search by BLASTA and FASTA
		CO7. To study the lab Safety Techniques and sterilization.
		CO8. To analyse protein on native PAGE and SDS-polyacrylamide gel electrophoresis.
	ZY 203 P: Practicals In Developmental Biology	CO1. Mounting of chick embryos and preparation of permanent mounts
		CO2. Perform the filter paper ring method for in vitro culturing of chick Embryo & observations.
		CO3. Perform the gross anatomy and histology of chick embryo upto 72 hrs. Brain, heart, lens, ear development
		CO4.Understand the study of Drosophila development on live material
		CO5. Study of embryonic and post-embryonic development using frog egg as a model system.
		CO6. Study of effect of ligature in Drosophila / House fly larva
		CO7. Study the imaginal disc in Drosophila larva
		CO8. Perform the Chick limb bud staining with neutral red for morphogenetic cell death
		CO9. Study of grafting of Hensen's node
		CO10. Study of regeneration of Hydra/Planaria
	ZY 205 P: Practicals In Comparative Animal Physiology	CO1. Study of nitrogenous waste products of animals from different habitats.
		CO2. Understand the study of RBCs in different vertebrates and in different physiological conditions.
		CO3. Perform the body size and oxygen consumption in aquatic animals (crab/fish).
		CO4. Estimation of sugar in rat/crab/human blood.
		CO5. Perform the effect of insulin on the blood sugar of rat.
		CO6. Estimation of lactate content of rat/crab/human blood.
		CO7. Determination of bleeding time & clotting time of human blood
		CO8. Estimation of chloride content of rat/crab/human blood.
		CO9. Perform the Capillary circulation in the foot-web of frog/tail-fin of fish
		CO10. Effect of load on muscle contraction in the frog/rat/fowl.
		CO11. Determination of the heart beat in the crab-effect of temperature & ions
		CO12. Study the effect of eye stalk ablation on chloride & glucose in the haemolymph of the crab.
	ZY 206 P: Practicals In Ichthyology	CO1. Study the general external characters, fins and scales (permanent slides & temporary preparations); morphometric measurements .
		CO2. Study of Classification of fishes (12-18 representatives of different orders); use of diagnostic keys
		CO3. Pharyngeal basket and skull of lamprey; endoskeleton 9 articulated and disarticulated) of carp
		CO4. Length-weight relationship, conditions factors, gonosomatic and hepatosomatic indices of any one species
		CO5.Demonstration of adaptations of fishes (adhesive organs, accessory respiratory organs, stomachless fishes, spiral valve, electric organs
		CO6. Perform the Digestive, and reproductive systems of carp/catfish/Tilapia
		CO7. Cranial nerves (V, VII, IX &X) and eye ball musoulature and innervations in Scoliodon and carp/catfish
		CO8.Study of histology of digestive, respiratory, excretory, reproductive and endocrine organs
		CO9.Understand and perform the Chromatophores and their responses to external agent
		CO10. Study of Satiation index (e.g.Gambusia-mosquito larvae system)
		CO11. Understand the Setting up of an aquarium and study of breeding behaviour of gourami Siamese fighter, swordtail/tilapia
		CO12. To Visit fish farm/fish market.
M .Sc. II		
SEM. - III	ZY- 301P Entomology I	CO 1. To understand the basic concepts of entomology, its Origin , Evolution and Inter-relationship of insects with other arthropods.
		CO 2. To learn classification and taxonomy of various insect orders.
		CO 3. To study the integument and it's derivatives.
		CO 4.To study of : Head and its appendages; Thorax and its appendages ; Abdomen and it's appendages.
		CO 5. Comparative and histological studies of the different body systems.
		CO 6. Studies of the following systems: The Sense organs, Endocrine glands and Exocrine glands.
		CO 7. Learn structure and mechanism of Light and sound producing organ.
	ZY- 301P Entomology I	CO 1. To understand Method of collection, preservation & presentation of insect.

	CO 2. Study of generalized insect including Systematic position, Habit and Habitat, Importantmorphological features and Dissection of so as to study: Digestive. Nervous andReproductivesystem and Retrocerebral complex.
	CO 3.To study the head capsule, mouthparts and antenna and their modification.
	CO 4.To study the generalized wing and their modification with significance.
	CO 5.To study the insect orders; (i)Apterygote insects, (ii) Exopterygoteinsects and (iii) Endopterygote insects inclusive of Taxonomy and diagnostic features upto family.
	CO 6. To study digestive, nervous and reproductive system by dissecting insect
	CO 7.To learn temporary mounting of Mouth parts, Antenna, Wings and Appendage of the insect pest.
Y 302 T ENVIRONMENTAL BIOLOGY	CO.1.Student understood concept of ecosystems, Biogeochemical cycles, Food-chains etc.
	CO.2.Student understood classification of microbes and their applications in the environmental sciences.
	CO.3.Student understood classification of biomes, major biotic elements of each biome and their characteristics
	CO.4.Student understood India's biogeographically history, climate and its impact on biodiversity, Indian forest and vegetation types.
	CO.5.Student understood Population and Community Ecology.
	CO.6.Student understood types of wetlands, important wetlands of India and their conservation issues, ecological status of forests and arid lands.
	CO.7.Student understood Threatened species categories of IUCN, threatened species of plants and animals in India and their reasons.
	CO.8.Student understood Goals of wildlife management, important projects for the conservation of wildlife in India, Role of local communities in wildlife management.
PRACTICALS IN ENVIRONMENTAL	CO.1.Student understood Structure of ecosystem, various methods for water and plankton collection.
	CO.2.Student understood How to identify and quantify planktons from water samples.
	CO.3. Students understood how to calculate Density, abundance and percent frequency of species.
	CO.4.Student understood Preparation of media for microbial culture.
	CO.5.Student understood different titration methods.
	CO.6.Student understood different physico - chemical properties of soil.
ZY 304 T Insect Physiology and Biochemistry	CO 1. Study of Integument of insect.
	CO 2. Study of Digestion and absorption of proteins, Carbohydrates and lipids in insect.
	CO 3. Study of fat body of insect.
	CO 4. To understand the ventilatory mechanisms and their control
	CO 5. Study of haemolymph in insect.
	CO 6. Study of muscle in insets.
	CO 7. Study of excretion and water balance in insects.
	CO 8. Study of microsomal and extramicrosomal enzymes insecticide degradation and detoxification.
	CO 9. Study of Endocrines, neurosecretory hormones, chemistry, function and mechanism of hormone action, moulting and juvenile hormones ; chemistry and physiology, other peptide and steroidHormones.
ZY 304 P Insect Physiology and Biochemistry	CO 1.Study of Kymographic study of ventilatory movement in beetle.
	CO 2. Study of Oxygen consumption in dragon fly nymph
	CO 3.Study of heart and haemocytes of cockroach
	CO 4.To determine the trehalase activity in haemolymph of any insect.
	CO 5.To determine amino acid in haemolymph of any insect by chromatographic technique.
	CO 6.Study of fat body glycogen of cockroach and effect of starvation
	CO 7.Assay of amylase in midgut of cockroach
	CO 8.To study effect of temperature on water loss in cockroach
	CO 9. To study Von Wisselinghs test for presence of chitin in insect cuticle
ZY 305 P - Research Methodology	CO 1. To study selecting a title for the paper, writing the abstract and key words
	CO 2.To study Writing the Discussion Conclusions and Results: Citation of references
	CO 3. To understand importance of scientific surveys, primary data and secondary data in research
	CO 4.Writing a project proposal to a funding agency.
	CO 5.Use of MS Excel in data presentation.
	CO 6.To study different examples of some common statistical tests
	CO 7.To understand purification of a biomolecule
	CO 8. To study making a ICT enabled scientific presentation
	CO 9. To study different microscopic techniques
ZY 307 T Fundamentals Of Systematics	CO 1. Detailed study of systematics and living organism classification system.
	CO 2. Study of kingdom of life.
	CO 3. To understand different methodologies of in systematics.
	CO 4. Study of taxonomic key, taxonomic procedure and molecular phylogeny.
ZY 307 P Fundamentals Of Systematics	CO 1. Study of minor phyla-specimen Study
	CO 2. Study of museum specimens and slides
	CO 3. Identification of animals with the help of keys-House fly, Honey bee etc.
	CO 4. Identification of animals with the help of keys- Cockroach, Earthworm.

		CO 5. To understand different method of collection, Preservation, and Curetting of any insect Specimen
		CO 6. Visits to Scientific Institute like Zoological Survey of India and Report writing
	ZY 308 Insect ecology	CO 1.Study of insect ecology.
		CO 2. To Study of different abiotic factors on insects, herbivores insects.
		CO 3. To Study of natural enemies of insects and insect population dynamics.
		CO 4. Detailed study of insect ecosystem and their conservation.
SEM. - IV	ZY 401 T Entomology II	CO 1. To understand Gametogenesis and fertilization in insects.
		CO 2. To understand the processes of early embryonic development in insects.
		CO 3. To study the post embryonic development in insects.
		CO 4. Study of different experiments on regeneration and aging of insects.
		CO 5. To understand diapause in insects.
	ZY 401 P Entomology II	CO 1. Study of different types of insect Eggs.
		CO 2. To understand the early embryology of insect: egg, cleavage, blastula, germ band, gastrula, embryo- 1 day old, 2 day old and 3 day old in suitable insect.
		CO 3. Study of post embryonic development of insects.
		CO 4. Study of histological studies of male reproductive system.
		CO 5. Study of Histological studies of female reproductive system.
		CO 6. Study of dissection of House fly: The digective system, Nervous system & reproductive system.
		CO 7. Study of Dissection of butterfly: The digective system, Nervous system, reproductive System.
		CO 8. Study of different Beneficial Insects.
		CO 9. Study of different harmful Insects.
		CO 10. Study of morphological and taxonomic study of insect pest of agricultural importance.
		CO 11. Study of insect pests and veterinary and public health importance.
		CO 12. Study of efforts of contact poison on pests.
		CO 13. Study of insect repellants.
		CO 14. Study of insect attractants.
	ZY 402 T Economic zoology	CO 1. Study of Parasitic protozoans and their role in human welfare, soil protozoans and their role in agriculture.
		CO 2. Study of Sponge culture and its importance in industry.
		CO 3. Study of Concept of Coral reef and its significance.
		CO 4. Study of Helminths as human and animal parasites.
		CO 5. Study of Nematodes- parasitic roundworms of animals and plants.
		CO 6. Study of Vermiculture industry in India.
		CO 7. Study of Household insects, Apiculture, Lac culture, Sericulture, Prawn culture, Insects ofcommercial value and stored grain pests.
		CO 8. Study of Economic importance of amphibian, reptiles and birds
		CO 9. Study of Poultry, Piggery, Dairy industry and wool industry.
		CO 10. Study of Poultry, Piggery, Dairy industry and wool industry.
	ZY 402 P Economic Zoology	CO 1. Study of Prawn culture in laboratory aquarium.
		CO 2. Study of Apicultureequipments.
		CO 3. Study of Poultry breeds, feeding utensils in poultry
		CO 4.A visit to piggery/poultry/pearl culture centre/ apiculture centre/sericulturecentre.
		CO 5. Study of Fishing tools, crafts and gear.
		CO 6. Study of Morphology of Edible, freshwater fishes-Catla,Rohu, Labeo, Mrigala, Notopterus, Mystusspp., Clarius, Channa, Heteropneustes, Reba,Wallago.
		CO 7. To understand Collection and identification of locally available/cultured fishes.
	ZY 406 P Apiculture	CO 1. Study of Honey bee species, Castes and Bee morphology.
		CO 2. Study of Beekeeping equipments: Bee box and tools.
		CO 3. Study of Bee products: Honey, Bees wax, Pollens, Royal Jelly, Propolis and Bee venom.
		CO 4. A compulsory visit to an Apiary or Central Bee Research & Training Institute or a Beekeeper to gain a first hand experience in handling bees.
		CO 5. Study of bee flora in the locality and observations on bee foraging Behaviour.
	ZY 403 T Biodiversity Assessment	CO 1. Study of concept of biodiversity and its importance.
		CO 2. To understand general outline of kingdom of life.
		CO 3. Study of biodiversity distribution of animals.
		CO 4. Study of wild life and different criteria's for animals
		CO 5. Study of different threats to biodiversity.
		CO 6. Study of conservation of Biodiversity and roles of different organization in conservation.
		CO 7. To understand conservation and prevention acts in India
		CO 8. Case studies of different projects in India.
	ZY 403 P Biodiversity Assessment	CO 1. Study of fauna of different zoogeographical regions - with minimum three examples from eachregion.
		CO 2. Biodiversity studies of fishes, amphibians ,reptiles, aves ,mammals available in the local area.
		CO 3. Study of biodiversity indices with suitable examples.
		CO 4. Study of qualitative analysis of zooplanktons.
		CO 5. Study of community characteristics by quadrat and transect method.
		CO 6. Study of Sampling technique and experimental design in soil/water/forest.

		CO 7. Checklist preparation of fish/ birds/ mammal fauna in local area.
		CO 8. Study of endangered fauna of Maharashtra .
		CO 9. To understand supportive instruments in Biodiversity assessment.
		CO 10. A visit to wild life sanctuary.
	ZY 407 T Pest control	CO 1. An introduction of the pest control, types of pests and their importance, Damage caused by pests.
		CO 2. Study of Brief outline of medical and veterinary entomology with reference to important measures to control the vectors. House hold and stored grain pest and their control measures.
		CO 3. Study of principles and methods of pest control
		CO 4. Study of Autocidalcontrol ,Chemosterilents,Kniplingsmodel,Pheromonal and hormonal control.
		CO 5. Study of non- insect pest and their control: Rat, Bandicoots, Crabs, Snails, Slugs, Birds and Squirrels.
		CO 6. Study of Pesticide- Appliances: Sprayers and Dusters, Hazards of Pesticides and Antidotes.
	ZY 405 T Pollution Biology	CO 1. Study of Biosphere: Introduction, hydrosphere, lithosphere, atmosphere.
		CO 2.Study of Pollution: Kinds of pollution and pollutants(Air, Water, Agricultural)
		CO 3. Study of Noise pollution: Characteristics of sound, source and effects of noise pollution.
		CO 4. Study of pesticide pollution: Pesticides and their kinds, possible sources and pathways of pesticide Pollution. Impact of pesticides on living organisms.
		CO 5. Study of Radioactive pollution: Types , sources and effects, radioactivity assessments and control.
		CO 6. Study of Bioassay: Purpose of bioassay, selection and test organisms, pollutant bioassay using fish.
		CO 7. Study of pollution monitoring: strategies for water, soil, noise.
		CO 8. Study of Histological, biochemical and physiological methods to study Impact of pollutants on animals.
		CO 9. Study of Bioconcentration, Bioaccumulation and Biomagnifications of pollutan.
		CO 10. To understand biological methods for assessment of environmental quality.
	ZY 405 P Pollution Biology	CO 1. Study of bio – indicators of pollution
		CO 2. Analysis of CO, CO2 NO pollution level data in collaboration with district pollution dept. of Maharashtra
		state.
		CO 3. Study of Eutrophic ponds /lakes /river.
		CO 4. Visit to water filtration plant/Pollution.
		CO 5. Analysis of pH and salinity form water /soil sample.
		CO 6. To determine of LC50 / LD50 for insecticide / pollution /molluscicide etc.
		CO 7. To Estimate of Biomass by:- i) Wet weight and ii) Dry weight.
		CO 8.To Estimate of calcium and magnesium in polluted water.
		CO 9. To understand Soil analysis for calcium carbonate
		CO 10. To estimate of sulphate in polluted water.