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Anekant Education Society's
TULJARAM CHATURCHAND COLLEGE
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2.6.1 - Programme Outcomes and Course Outcomes for all Programmes offered by the institution are stated and displayed on the website and communicated to teachers and students

Course Outcome - F.Y.B.A.

Name of Course	Paper Code	Paper Name	Outcome
Compulsory English	ENGCO1101 ENGCO1102	Compulsory English Compulsory English	• Students learn grammar effectively • They get know literature in English • Students learn language skills
Functional English	ENGFE1103	An Introduction to English Language and Writing Skills in English	• Students speak English with good pronunciation • Students use English language according to situation • Students develop proficiency in grammar and vocabulary • Students acquire basic skills in writing
Functional English	ENGFE1203	An Introduction to English Language and Writing Skills in English	• Students speak English with good pronunciation • Students use English language according to situation • Students develop proficiency in grammar and vocabulary • Students acquire basic skills in writing
Functional English	ENGFE1104 ENGFE1204	Oral Communication in English Oral Communication in English	• Students will speak English without hesitation. • Classroom practice of communication skills will enable students to cope with English language difficulties in daily life • Presentation skill will be developed among the students • Students will perform speech effectively. • Students will be acquainted with proper accent and intonation of English language.
General	ENGGE1102	Optional English	• Students learn the basics of literature and language.

(Optional) English	ENGGE1202	(General Paper-I) Optional English (General Paper-II)	• Students understand the literary merit, beauty and creative use of language. They get familiar with the literary devices and terms. • Students get acquainted with the technical and practical aspects of language. • Students are prepared for detailed study and understanding of literature and language. • Students are developed for an integrated view about language and literature.
Economics	ECO1101	Indian Economy – Problems and Prospects I	• Students understand nature of Indian economy. • Students will know the problems and prospects of Indian economy. • Students will learn the role of different sectors in economy.
Economics	ECO1201	Indian Economy : Problems & Prospectus II	• Students will know the potential of Indian economy. • Students learn the economic indicators of Indian economy. • Students will understand basic economic things for the development.
Sociology	SOC 1101	Introduction To Sociology	• Employ the sociological imagination to describe how individuals' life experiences are shaped by social structures and categories (e.g., race, class, gender, sexuality). • Identify and describe the concepts and research methods that are introductory to sociological knowledge and research. • Apply sociological concepts to understand contemporary social issues and/or public debates about these issues. • Apply sociological concepts and research methods to generate a sociological understanding of a topic related to a main theme in the sociological curriculum (e.g., intersectionality, identity, social control, social power).
Sociology	SOC 1201	Introduction To Sociology	• Employ the sociological imagination to describe how individuals' life experiences are shaped by social structures and categories (e.g., race, class, gender, sexuality). • Identify and describe the concepts and research methods that are introductory to sociological knowledge and research. • Apply sociological concepts to understand contemporary social issues and/or public debates about these issues. • Apply sociological concepts and research methods to generate a sociological understanding of a topic related to a main theme in the sociological curriculum (e.g., intersectionality, identity, social control, social power).
Geography	GG1101	Physical Geography	• The students of Geography should understand the current issues in Physical geography. Specifically Physical geography focused on Lithosphere, Fluvial Cycle, Atmosphere, and Hydrosphere

Geography	GG1201	Human Geography	• The students should able to identify and understand environmental factors and population in terms of their quality and spatial distribution pattern. At the same time it focused the composition of Indian population
History	HIS 1101	Chh. Shivaji and his times, Part I	• By studying this paper students will get acquainted with regional history. • Through this paper students will understand political and administrative condition of Maharashtra in the reign of Chh. Shivaji. • It will inculcate the values of Nationalism and Secularism.
History	HIS 1201	Chh. Shivaji and his times Part II	• Through this paper students will understand political condition of Maharashtra in post Chh. Shivaji period. • By studying this paper students will get acquainted with socio-economic and cultural condition of 19th century Maharashtra.
Political Science	POL 1101	INDIAN GOVERNMENT AND POLITICS	• This paper focuses in detail on the political processes and the actual functioning of the political system . It simultaneously studies in detail the political structure both Constitutional and Administrative. 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. the major contradictions of the Indian Political Process are to be critically analyzed along with an assessment of its relative success and failure in a comparative perspective with other developing countries
Political Science	POL 1201	INDIAN GOVERNMENT AND POLITICS	• This paper focuses in detail on the political processes and the actual functioning of the political system .It simultaneously studies in detail the political structure both Constitutional and Administrative. 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. the major contradictions of the Indian Political Process are to be critically analyzed along with an assessment of its relative success and failure in a comparative perspective with other developing countries.
Marathi	MAR1101 MAR1201	आधुनिक मराठी साहित्य व व्यावहारिक मराठी	• आधुनिक मराठी साहित्याचा सामाजिक दृष्टिकोणातून विद्यार्थ्यांनी अन्वयार्थ लावावा आणि प्रसारमाध्यमांसाठी गुणवत्ता पूर्ण लेखन कौशल्य हस्तगत करावे.
Marathi	MAR2302 MAR2402	मराठी साहित्यातील विविध साहित्य प्रकार	• मराठीतील विविध साहित्यप्रकारांची ओळख व त्यातील साम्यभेद वैशिष्टये विद्यार्थ्यांच्या लक्षात येतील.
Hindi	HIN1101 HIN1201	सामान्य हिंदी १ सामान्य हिंदी २	• व्याख्यान तथा विश्लेषण, सस्वर काव्य पाठ, प्रकट वाचन, नाटय वाचन इ.

Psychology	PSY1101	General Psychology –I	• Gain knowledge of the basic concepts and modern trends in Psychology. • Understand career opportunities in Psychology. • Understand the structure and functions of central and peripheral nervous system and how it affects cognition, emotion and behavior of people know the concept of Consciousness, Sleep and Dream
	PSY1201	General Psychology –II	• Understand theories of learning and its application • Understand models of memory and its applications • Understand theories and measures of personality. • Understand the basic concepts of Thinking, Language and Intelligence.
Defense Studies	DEF1101A DEF1201A	Defence Mechanism of India – I or Military Thinkers – I	• Students will able to analyze the defence operations performed by India from the point of view of Armed Forces. • Students will get to know future job opportunities and how to join the less popular wings of Paramilitary forces and other services.
	DEF 1101B DEF 1201B	Defence Mechanism of India – II or Military Thinkers - II	• Students will able to analyze the military strategy and ideas implemented by military organizations. • Students will able to recognize strategies or methods used to win war by various thinkers.
Philosophy	PHIL1101 PHIL1201	Introduction To Philosophy Moral Philosophy	● Philosophy Changes human life ● Change of mind to philosophy ● Describe an ethical theory and it's rationale • Explain the meaning of key ethical issues, concept or principles and compare or evaluate different ethical theories.
Yoga	YOG1101	Foundations of Yoga I	• Improve physical conditioning related to flexibility through practice of Yoga. • Enable students to understand the yogic therapy and its application.
Yoga	YOG1201	Foundations of Yoga II	• Knowledge of the interconnections between the body, the breath, the mind, and the emotions in the context of maintaining resilience and well-being • Recognize and apply the value and benefits of an on-going yoga practice
Sanskrit	SAN1101 SAN1201	Introduction to Sanskrit Literature-I Introduction to Sanskrit Literature-II	• Develop an interest in and enthusiasm to discover less-discovered Sanskrit Texts. • Know the concept of Science in Sanskrit. • Understand the linguistic difference in sanskrit from different time periods.
Logic	LOG 1101	TRADITIONAL LOGIC (DUCTIVE LOGIC)	● Encourage of reasons ● To uses of daily life

	LOG 1201	TRADITIONAL LOGIC (DUCTIVE LOGIC)	● To learn identifying different types of arguments as well as their premises and conclusions. ● To develop the overall reasoning skills of the students which are useful in various competitive exams.

Course Outcome - S.Y.B.A.

Name of Course	Paper Code	Paper Name	Outcome
Compulsory English	ENGCO 2301	Compulsory English	• Students develop self-learning abilities. • Students understand the literary merit, beauty and creative use of language. They get acquainted with the literary genres of prose and poetry. • Students get familiar with socio-cultural ethos as revealed through texts prescribed and try to correlate it with everyday situations. • Students achieve language skill effectively. • Students attain confidence to enter the various career opportunities.
	ENG CO 2401	Compulsory English	
Functional English	ENGFE 2305	Advanced Writing Skills and Introduction to Electronic Media	• Students communicate in written mode. • Students change language according to situation. • Students use electronic media for communication. • Students organize events
	ENGFE 2405	Advanced Writing Skills and Introduction to Electronic Media	
Functional English	ENG FE 2306	Oral Communication in English	• It educates students in both the artistry and utility of the English language through the study of basic language skills • It assists students in the development of intellectual flexibility and creativity through spoken language
	ENG FE 2406	Oral Communication in English	
General English	ENG GE 2302	Study of English Language and Literature	• Students learn to appreciate short stories in English. • They get to know different branches of linguistics. • Students learn language skills.
	ENG GE 2402	Study of English Language and Literature	
Special English	ENGSPL2303	Appreciating Drama	• Students understand the salient features of drama and criticism. • Students get acquainted with some of the masterpieces of English dramas from different parts of the world.
	ENGSPL2403	Appreciating Drama	

			• Students acquired the ability to appreciate and analyze drama independently. • Students developed the ability to cultivate aesthetic and ethical values in life through studied plays.
Special English	ENGSPL2304	Appreciating Poetry	• The students understand the nature, function and relevance of poetry as a form of literature • The students learn to criticize the specimen poems with the terminology in poetry • The students understand the sample masterpieces of English Poetry • The students learn to read, appreciate and critically evaluate the poetry independently
	ENGSPL 2404	Appreciating Drama	
Economics	ECOGEN2301	Banking & Finance	• The main outcome of this course is acquaint students with various types & functions of Banks and negotiable instruments and modern technology in banking.
Economics	ECOSPL2302	Micro Economics -I	• The main outcome of this course is to expose Students of Arts to basic Micro Economics concepts and inculcate an analytical approach to the subject matter.
Economics	ECOSPL2303	Macro Economics -I	• Students would be able to understand the functioning and interlink ages amongst macro economic variables. • The course will equip the students with the tools to understand the behaviour of the economy. • The students would be able to they would be able to apply economic reasoning to problems of the economy.
Economics	ECOGEN2401	Co-Operation	• The main outcome of this course is acquaint students with co-operative movement, co-operative banking system and co-operative institutions
Economics	ECOSPL2402	Micro Economics –II	• The main outcome of this course is to expose Students of Arts to basic Micro Economics concepts and inculcate an analytical approach to the subject matter
Economics	ECOSPL2403	Macro Economics II	• Students would be able to understand the functioning and interlink ages amongst macroeconomic variables. • The course will equip the students with the tools to understand the behaviour of the economy.

			• The students would be able to they would be able to apply economic reasoning to problems of the economy.
Geography	GEO:2301	Environmental Geography I	• Students would know about surrounding environment, biodiversity and different type of eco system. • Students easily identify renewable and non-renewable recourses which is use in daily life.
Geography	GEO:2302	Geography of Maharashtra - I	• Students will well aware about Geography of Maharashtra. • Students will understand administrative and physical structure of Maharashtra. • Students will well aware about climatic situation in Maharashtra. • Students will understand various types of resources in Maharashtra.
Geography	GEO:2303	Practical Geography – I (Scale and Map Projections)	• After study this paper students can able to identify any map scale and projection. They can also know which projection is suitable for given region.
Geography	GEO:2401	Environmental Geography II	• Students will awareness about dynamic environment surrounded by us. • Students will understand the fundamental concepts of Environment Geography. • Students can understand about the past, presents and future utility and potentials of natural resources. Students aware about the problems of environment, its utilization and conservation in the view of sustainable development.
Geography	GEO:2402	Geography of Maharashtra – II	• Students can aware about the Agriculture problems and prospects of Maharashtra. • After studying this course, students can understand the population distribution and settlement pattern in Maharashtra. • Students able to understand the concept of rural development. • Students able to understand the prospectus in Tourism activity in Maharashtra and the role of MTDC.
Geography	GEO:2403	Practical Geography – II (Cartographic Techniques, Surveying and Excursion / Village / ProjectReport)	After the successful completion of the course, the students will be able to: • Develop practical knowledge and application of cartographical techniques. • To make students aware of the new techniques, accuracy and skills of Map Making.
History	HISGEN 2301	Modern India Part I	• By studying this paper students will be acquainted with process of emergence of nationalism in India.

			• Students will understand the role of the Socio-Religious movements in emergence of nationalism. • Students will know about the early political organizations. • Students will understand British policies in India.
History	HISGEN2401	Modern India Part II	• Understand how Indian freedom movement received nationwide recognition • Know the contemporary constitutional developments. • Get acquainted with the various class, caste, gender-related movements
History	HIS SPLI2302	Ancient India Part I	• Get acquainted with the sources of ancient Indian history. • Know about the early civilizations in India. • Understand the socio-religious and economic transformations during the 6th Century A.D.
History	HISSPLI2402	Ancient India Part II	• Know the early empires of ancient India. • Understand various developments in South India in ancient time.
History	HISSPLII2303	Medieval India Part I	• Get acquainted with sources of medieval history. • Understand rise and development of early medieval power. • Know about art and architecture during Sultanate period.
History	HISSPLII2403	Medieval India Part II	• Get to know about powers in southern India before advent of Mughals. • Get acquainted with rise and expansion of the Mughal empire. • Understand cultural developments during Mughal period.
Political science	POLGEN 2301	POLITICAL THEORY & CONCEPTS G-II	• Furthermore there is a need to emphasize the continuing relevance of these concepts today and explain how an idea and theory of yesteryears gains prominence in contemporary political theory.
Political science	POLSPL 2302	WESTERN POLITICAL THOUGHT S-I	• The limitations of the classical tradition, namely its neglect of women's concerns and issues and the non-European world are critically examined. The legacy of the thinkers is explained with the view to establish the continuity and change within the Western political tradition.
Political science	POLSPL 2303	POLITICAL SOCIOLOGY S-II	• Students are also expected to understand different forms of justifications of power and the role of ideology in this regard. 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.
Political science	POLGEN2401	POLITICAL THEORY & CONCEPTS G-II	• Furthermore there is a need to emphasize the continuing relevance of these concepts today and explain how an idea and theory of yesteryears gains prominence in contemporary political theory.

Political science	POLSPL2402	WESTERN POLITICAL THOUGHT S-I	• The limitations of the classical tradition, namely its neglect of women's concerns and issues and the non-European world are critically examined. The legacy of the thinkers is explained with the view to establish the continuity and change within the Western political tradition.
Political science	POLSPL2403	POLITICAL SOCIOLOGY S-II	• Students are also expected to understand different forms of justifications of power and the role of ideology in this regard. 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.
Marathi	MAR2301	आधुनिक मराठी साहित्य व उपयोजित मराठी	• भाषेच्या विविध अविष्काराचे ज्ञान संपादन करून त्याचे व्यवहारात उपयोजन करता येईल. • मराठी भाषेच्या लेखन विषयक नियमांच्या अभ्यासामुळे निर्दोष लेखन करता येईल • 'चरित्र' यासाहित्य प्रकाराची ओळख होईल त्याचा अन्वयार्थ लावण्याची दृष्टी विकसित होईल.
Marathi	MAR2302	मराठी साहित्यातील विविध साहित्य प्रकार	• मराठीतील विविध साहित्यप्रकारांची ओळख व त्यातील साम्यभेद वैशिष्टये विद्यार्थ्यांच्या लक्षात येतील
Marathi	MAR2401	आधुनिक मराठी साहित्य व उपयोजित मराठी	• सारांश लेखन कौशल्यामुळे मुद्देसूद आणि नेमक्या शब्दात एखादया विषयाचे मर्म सांगण्याचे व लिहण्याचे कौशल्य प्राप्त होईल • आत्मचरित्र यासाहित्य प्रकाराची ओळख होउन त्याचा अन्वयार्थ लावण्याची दृष्टी विकसित होईल • पारिभाषिक संज्ञांच्या अभ्यासामुळे पर्यायी मराठी शब्दाच नेमकेपणाने ज्ञान होईल
Marathi	MAR2402	मराठी साहित्यातील विविध साहित्य प्रकार	• मराठीतील विविध साहित्यप्रकारांची ओळख व त्यातील साम्यभेद वैशिष्टये विद्यार्थ्यांच्या लक्षात येतील
Marathi	MAR2303	अर्वाचीन मराठी वाङ्.मयाचा इतिहास	• अर्वाचीन मराठी वाङ्.मयाचा इतिहास (१८१८ – १९२०)
Marathi	MAR2403	अर्वाचीन मराठी वाङ्.मयाचा इतिहास	• अर्वाचीन मराठी वाङ्.मयाचा इतिहास (१९२१ – १९६०)
Hindi	HIN 2301	काव्यशास्त्र	• काव्यशास्त्र हिंदी विशेष – १
Hindi	HIN 2401	काव्यशास्त्र	• काव्यशास्त्र हिंदी विशेष – १
Hindi	HIN 2302	हिंदी विशेष – २	• उपन्यास, नाटक तथा मध्ययुगीन हिंदी काव्य
Hindi	HIN 2402	हिंदी विशेष – २	• उपन्यास, नाटक तथा मध्ययुगीन हिंदी काव्य
Hindi	HIN 2303	सामान्य हिंदी	• कहानी, काव्य एवं लेखन पाठयक्रम
Hindi	HIN 2403	सामान्य हिंदी	• कहानी, काव्य एवं लेखन पाठयक्रम
Psychology	PSY 2302	Abnormal psychology-I	• Get acquainted with classic and contemporary theories in abnormal psychology. • Understand different psychological disorders with respect to symptoms, diagnosis, causes and treatment. • Increase awareness about mental health problems in society.
Psychology	PSY 2303	Growth and Development Psychology I	• Understand the main characteristics and variations in human development and the most important development mechanisms.

			• Understand the influences of various factors on development. • Understand normal growth and development across the lifespan.
Psychology	PSYGEN2301	Social Psychology I	• Gain knowledge of the basic concepts and modern trends in Social Psychology. • Using research knowledge and aptitude acquired in the course of study for solving socially relevant problems. • Developing problem analysis skills and knowledge and applying the same in social life situation.
Psychology	PSY 2402	Abnormal psychology-II	• Understand the issues related to diagnosis and labelling of mental disorders. • Know the different psychotherapies used for treatment. • Create a foundation for higher education and a professional career in clinical psychology.
Psychology	PSY 2403	Growth and Development Psychology II	• Get acquainted students with the basic concepts of human development processes. • Identify and apply developmental concepts to everyday life. • Understand the implication of recent research in developmental psychology.
Psychology	PSY2401	Social Psychology II	• Fostering ability to engage in lifelong learning, demonstrating empathetic social concern, contributing to the development of nation. • Implication of social psychology in everyday living. • Understand the importance of Close Relationships and Pro- social behavior
Defence Studies	DEFGEN2301(A) DEFGEN2401(A)	Military Geography	• Student will be able understand relation between national power and distribution and use of natural resources. • Students will be able understand geo strategy, grand strategy, strategy and tactics. • Student will be able understand the relation between geography and war • Students will get knowledge about the strategies to be used in the warfare in different terrain. • Students will get critical analysing skill regarding how geographical factors influence strategy, tactics and military operations.
Defence Studies	DEFGEN2301(B) DEFGEN2401(B)	Geopolitics	• Student will be able understand various geopolitical theories. • Student will be able understand geopolitical importance of Indian Ocean. • Students will be able understand complex relation between countries from

			geographical perspective. • Students will get knowledge about crucial role of geopolitics in nation's foreign policy. • Students will get critical analysing skill regarding how geographical factors influence international politics.
Defence Studies	DEF SPL 2302 DEF SPL 2402	Chatrapati Shivaji's Military system	• Student will be able to explain holistically the era of Shivaji Maharaj and major military development during the period. • Understanding Shivaji's military system and their military strategies, tactics and methods through different battle occurred in that period. • Disseminate Ideas and thoughts of Chhatrapati Shivaji Maharaj for Indian nation making and nation building process and its relevance in present time. • Student will be able to relate the geographical condition of Maharashtra and the strategic military movement in that era. • Student will be able to explain Chhatrapati Shivaji's guerrilla tactics and maritime strategy.
Defence Studies	DEF SPL 2303 DEF SPL 2403	India's Internal Security	• Students will get knowledge about India's internal security environment. • Student will be able to explain India's internal security threats and reasons behind the same. • Evaluating critical thinking and its outcome for developing eradication to India's various internal security challenges • Student will be able to explain the concept of terrorism, Naxalism, Insurgency and its impact over internal security of India. • Student will be able understand the various issues from security point of view like Illegal migration, drugs and human trafficking, Money laundering and arms trafficking.
Philosophy	PHIL2302 PHIL2402	INDIAN & WESTERN PHILOSOPHY	● Comprehend the theory of reality of the systems of Indian & Western philosophy ● Critically reflect over philosophical theories ● Compare and contrast the main concepts in the Indian and the Western Philosophy
Philosophy	PHIL2303 PHIL2403	Jain Philosophy	● Comprehend the theory of reality of the systems of Jain philosophy ● student should be able to demonstrate a clear understanding of the

			background to the historical relevance of Jain philosophy. ● have acquired a good understanding of the key doctrines/concepts of Jain tradition.
Philosophy	PHIL2301 PHIL2401	Philosophy of Indian Saints – Alternative Course	● This course will enable the students to have an understanding of the fundamentals Philosophy of indian Saints ● Learn about different accounts proposed by different philosophers, and how they are different**.**
Yoga	YOG 1301	Yoga Vidya I	• The students would be able to describe the meaning, definition and need of yoga skills to improve health. • Understand the yogic principles of healthy life styles. .
Yoga	YOG 1401	YogVidya II	• Get acquainted the competencies and skills needed to become a professional Yoga resource person. • Demonstrate an understanding of health-related fitness components with respect to yoga.
Sociology	SOCGEN2301	Population and Society	• Students are able to understand the nature, scope and concepts related to population studies. • Students are able to critically analyze the theoretical perspective of population studies. • Students are able to evaluate the population policy and population profile of India.
Sociology	SOCSPL2302	Foundations of Sociological Thought	• Students are familiarized with social, political, economical and intellectual contexts of emergence of Sociology. • Students are able to understand social thoughts. • Students are familiarized with major perspectives and works of some Indian sociologists.
Sociology	SOCSPL 2303	Indian Society: Issues and Problems	• Students are able to understand social issues and are empowered to face social problems. • Students are able to understand changing nature of social problems in India. • Students are able to to analyze social issues and problems using different sociological perspectives.
Sociology	SOCGEN2401	Population and Society	• Students are able to understand the nature, scope and concepts related to population studies.

			• Students are able to critically analyze the theoretical perspective of population studies. • Students are able to evaluate the population policy and population profile of India.
Sociology	SOCSPL2402	Foundations of Sociological Thought	• Students are familiarized with social, political, economical and intellectual contexts of emergence of Sociology. • Students are able to understand social thoughts. • Students are familiarized with major perspectives and works of some Indian sociologists.
Sociology	SOCSPL2403	Indian Society: Issues and Problems	• Students are able to understand social issues and are empowered to face social problems. • Students are able to understand changing nature of social problems in India. • Students are able to to analyze social issues and problems using different sociological perspectives.
Sanskrit	SANGEN2301 SANGEN2401	Introduction of Sanskrit I Introduction of Sanskrit II	• Develop an interest in and enthusiasm to discover less-discovered Sanskrit Texts. • Know the concept of Science in Sanskrit. • Understand the linguistic difference in sanskrit from different time periods.
Logic	LOG 2301 LOG 2401	FORMAL LOGIC	• Explain and apply basic notions of symbolic logic • Analyse natural language arguments by means of symbolic propositional logic

Course Outcome - T.Y.B.A.

Course Code	Course Name	Course Outcomes
ENGGE3501	Compulsory English	1. The students learn the best uses of language in literature. 2. The students learn the communicative power of English. 3. The students become the competent users of English in the real life situations. 4. The students acknowledge varied cultural experiences through literature. 5. The students improve in their communicative and soft skills.
ENGGE3502	Advanced Study of English Language and Literature	1. The students acknowledge different cultural experiences through literature. 2. The students learn the creative power of English language and appreciate its beauty. 3. The students learn the critical appreciation of a poem. 4. The students learn English language through literature and vice versa.

		5. The students acquaint with the advanced study of language through different levels.
ENGSPL3503	Appreciating Novel	1. The students acknowledge different cultural experiences through literature. 2. The students learn the creative power of English language and appreciate its beauty. 3. The students learn the critical appreciation of novels. 4. The students learn English language through literature and vice versa.
ENGSPL3504	Introduction to Literary Criticism	1. The students learn the basics of literary criticism 2. The students understand the nature and historical development of criticism 3. The students become familiar with the significant critical approaches and terms 4. The students learn to interpret literary works in the light of the critical approaches 5. The critical aptitude is developed in students
ENGFE3505	Introduction to Print Media and Writing for Mass Media & Key Competency Modules	1. The students acknowledge different career options. 2. The students are prepared for various careers in language. 3. The students understand about language change from one media to the other. 4. The students learn language activities of media through exposure.
ENGFE3506	Entrepreneurship Development, Project Report and Oral Communication in English.	1. To demonstrate an understanding of the concepts underlying corporate financial decision making 2. To demonstrate an understanding of the role of entrepreneurship and small business industries 3. To demonstrate basic knowledge of international business. 4. To demonstrate an understanding of economic and industrial development issues.
ENGCO3601	Compulsory English	1. The students learn the best uses of language in literature. 2. The students learn the communicative power of English. 3. The students become the competent users of English in the real life situations. 4. The students acknowledge varied cultural experiences through literature. 5. The students improve in their communicative and soft skills.
ENGGE3602	Advanced Study of English Language and Literature	1. The students acknowledge different cultural experiences through literature. 2. The students learn the creative power of English language and appreciate its beauty. 3. The students learn the critical appreciation of a poem. 4. The students learn English language through literature and vice versa. 5. The students acquaint with the advanced study of language through different levels.
ENGSPL3603	Appreciating Novel	1. The students acknowledge different cultural experiences through literature. 2. The students learn the creative power of English language and appreciate its beauty. 3. The students learn the critical appreciation of novels. 4. The students learn English language through literature and vice versa
ENGSPL3604	Introduction to Literary Criticism	1. The students learn the basics of literary criticism 2. The students understand the nature and historical development of criticism 3. The students become familiar with the significant critical approaches and terms 4. The students learn to interpret literary works in the light of the critical approaches 5. The critical aptitude is developed in students

ENGFE3605	Introduction to Print Media and Writing for Mass Media & Key Competency Modules	1. The students acknowledge different career options. 2. The students are prepared for various careers in language. 3. The students understand about language change from one media to the other. 4. The students learn language activities of media through exposure.
ENGFE3606	Entrepreneurship Development, Project Report and Oral Communication in	1. To demonstrate an understanding of the concepts of voice culture. 2. To demonstrate an understanding of the role of media (electronic and print). 3. To demonstrate basic knowledge of expressing to the self.
MAR 3028	साहित्य विचार	साहित्याच्या आकलनक्षमतेत वाढ होईल साहित्याचे विविधांगी स्वरूप, प्रवृत्ती, प्रवाह व साहित्यानुभवाकडे पाहण्याची मुलभूत दृष्टी विकसित होईल. साहित्याच्या भाषेचे वेगळेपण समजून घेण्याची क्षमता विकसित होईल
HINGEN 3501& HINGEN 3601	हिंदी —सामान्य—३ (HINDI GENRAL -3)	१. छात्रों में वैयक्तिक व्यक्ति में छुपी हुई भावनाओं को विकसित करना। २. छात्रों को एक साथ अनेक आत्मकथाओं का परिचय देकर उनमें प्रेरणा जागृत करना। ३. आत्मकथा से लेखक की परंपरा से छात्रों मे लेखन कला जागृत करना। ४. गजल का परिचय देकर छात्रोंमे गजल काव्य प्रकार से कल्पना शक्ति को जागृत करना। ५. गजल का परिचय देकर छात्रों में गजल काव्य प्रकार से कल्पना शक्ति को जागृत करना। ६. छात्रों में अंग्रेजी / मराठी से हिंदी में अनुवाद करने की कला को विकसित करना। ७. पत्राचार के माध्यम से छात्रों की स्वाभाविक भावनाओं को विकसित करना।
HIN GEN 3502& HINGEN 3602	हिंदी —सामान्य—३ (HINDI GENRAL -3)	१. हिंदी साहित्य के इतिहास से छात्रों को भारतीय संस्कृति का परिचय देना। २. इतिहास के अध्ययन द्वारा किसी राष्ट्र के उत्थान के साथ साथ उसके पतन की परिस्थिती से छात्रों को अवगत करना। ३. इतिहास के अध्ययन से मानव की सभ्यता से छात्रों को अवगत करने के साथ वही सभ्यता की सिख देना। ४. इतिहास से सम्बंधित ग्रंथ हिंदी के विद्वान आदि का परिचय देकर छात्रों में शोधार्थी की दृष्टि विकसित करना। ५. इतिहास ही पथ दर्शक होता है, छात्रों मे वही दृष्टि विकसित करना। ६. इतिहास कालीन भाषा, ग्रंथ, रचना, रचनाकार आदि का परिचय देकर छात्रों का ज्ञानवर्धन करना।
GEO 3501	Geography of Tourism-I	1. Students will understand basic concepts in tourism 2. Students will understand potentials of different tourist places.

		3. Students will know relationship between tourism and geography. 4. Students will get acquainted with accommodation.
GEO 3502	Physical Geography of India	1. Identify and explain the Indian Geographical Environment. 2. Evaluate the impacts on natural environments of India. 3. Understand difference between Himalayan and peninsular drainage system. 4. Know the impact of climate on types of soil.
GEO 3503	Practical in Map Reading and Map Preparation	1. Gain understanding of basic concepts of map making using ArcGIS techniques. 2. Become familiar with the reading of SOI toposheets and IMD weather maps. 3. Gain practical experience and awareness of some skills of map preparation and reading. 4. Identify different physical and manmade features on the toposheets. 5. Attain solid grounding to enable self-learning of additional techniques of map interpretation and making map beyond those taught in the course. 6. Use effectively Google Earth and Google Maps
GEO 3601	Geography of Tourism-II	1. Students will understand various impacts of tourism. 2. Students will know various tourist places of the world 3. Students will able to plan tours.
GEO 3602	Human Geography of India	1. Understand the Population distribution of India. 2. Demonstrate critical thinking in evaluating historical background for migration, Population and their distribution. 3. Understand impact of agriculture, Industries, Minerals on the Indian economy. 4. Analyze the human (migration, Population, Industries, Agriculture, Minerals) contexts of India in order to recommend policies aimed at social change
GEO 3603	Practical in Statistical Techniques	1. Gain understanding of basic statistical techniques used in Geography. 2. Analyze the data in the SPSS software. 3. Gain practical experience and awareness of some skills of field visits and data collection. 4. Develop skills by problem-solving, field and/or primary and secondary data collection, analysis and interpretation. 5. Develop communication and interactive skills through group work. 6. Enhance ability to work as part of a team.
HISGEN 3601	History General Paper III	1. Students will understand the gradual evolution of human society. 2. Students will acquire information about important developments and world concepts of 20th century. 3. Students will become aware of the principles, forces, processes and problems of the recent times. 4. Students will acquire knowledge about important movements that shaped the modern world.
HISSPL 3602	History Special Paper III	1. Students will understand the interdisciplinary relation between history and other social sciences. 2. Students will gain in-depth knowledge about historiography as a mode of knowledge. 3. Students will be introduced to regional and national historiography.
HISSPL 3603	History Special Paper IV	1. Students will gain knowledge about West Asia as well as East Asia through national viewpoints. 2. Students will get to know about the various political conflicts and movements in West Asia. 3. Students will get to know about the various international reformations which shaped the West Asia.

		4. Students will acquire detailed knowledge about South-East Asia and its developments in various spheres.
PSY 2501	PSYCHOLOGY AT WORKPLACE OR APPLIED PSYCHOLOGY I	1. Students will gain the knowledge of important concepts, processes and issues in the fields of Industrial Psychology. 2. Students will learn how to apply motivational theories at workplace. 3. Students will acquire and apply job search skills. OR 1. Students will understand the relationship between theoretical and applied aspects of Psychology. 2. Students will understand how theories and research of psychology can be applied to these real world settings.
PSY 2502	PSYCHOLOGICAL REASEARCH	1. Students will gain the basic research skills. 2. Students will learn how to apply psychological research in day to day life. 3. Students will learn scientific writing of research proposal and research report.
PSY 2503	PSYCHOLOGY PRACTICAL: TEST	1. Students will familiarize with the use of elementary statistical techniques. 2. Students will gain practical experience in administering and scoring psychological tests. 3. Students will gain practical experience of Group Testing
PSY2601	ORGANIZATIONAL PSYCHOLOGY OR APPLIED PSYCHOLOGY II	1. Students will gain knowledge of different facets of organizational functioning. 2. Students will learn how to apply organizational theories at workplace. 3. Students will apply theory and practice at organizational behavior. OR 1. Students will understand the role of Psychologists in various applied fields. 2. Students will learn about problems and solutions in various applied fields.
PSY 2602	EXPERIMENTAL PSYCHOLOGY	1. Students will learn fundamental of Experimental Psychology. 2. Students will learn psychological problem solving strategies. 3. Students will learn application of learning and memory in day today life.
PSY 2603	PSYCHOLOGY PRACTICAL: EXPERIMENTS	1. Students will familiarize with the use of elementary statistical techniques. 2. Students will gain practical experience of conducting and designing psychology experiments. 3. Students will gain practical application through study tour and visit.
ECOGEN3501	Economic Development and Planning-I	The main outcome of this course is acquaint students with concept of economic growth and development, various Characteristics of Developing Countries, Development Process and Theories.
ECOSPL3502	International Economics-I	The main outcome of this course is to expose Students of Arts to basic International Economics concepts and inculcate an analytical approach to the subject matter.
ECOSPL3503	Elementary Quantitative Technique-I	The main outcome of this course is apprising students with various concepts of statics with theoretical base and calculations. The paper also deals with simple tools and techniques, which will help a student in data collection, presentation, analysis and drawing inferences about various statistical hypotheses. All the learning is current application in overall syllabus.
ECOGEN3601	Economic Development and Planning-II	The main outcome of this course is acquaint students with Approaches to Economic Development and Foreign Capital, Macro Economic Policy, Economic Planning.
ECOSPL3602	International Economics-II	The main outcome of this course is to expose Students of Arts to basic International Economics concepts and inculcate an analytical approach to the subject matter.

ECOSPL3603	Elementary Quantitative Technique-II	The main outcome of this course is apprising students with various concepts of statics with theoretical base and calculations. The paper also deals with simple tools and techniques, which will help a student in data collection, presentation, analysis and drawing inferences about various statistical hypotheses. All the learning is current application in overall syllabus.
POL 3501	Political Ideologies G - 3	The close link between an idea and its actual realization in public policy needs to be explained as well. 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
POL 3502	Public Administration S - 3	The recent developments and particularly the emergence of New Public Administrations are incorporated within the larger paradigm of democratic legitimacy. The importance of legislative and judicial control over administration is also highlighted.
POL 3503	International Politics S - 4	It highlights various aspects of conflict and conflict resolution, collective security and in the specificity of the long period of the post Second World War phase of the Cold War, of Détente and Deterrence leading to theories of rough parity in armaments.
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3501(A)	India's National Security in 21st Century	1. Students can analyze what are the challenges of India's national security in 21st century and its solution 2. Through various India's strategic polices students will be able understand issues of India’s national security.
3501(B)	War and Contemporary Warfare	1. Student can Understand the New modern warfare and its process of execution. 2. Student will be able to provide policy input while tackling the New technological and hybrid warfare.
3502	International and Regional Organizations	1. Student Can analyze the main objective of formation of International and Regional Organization 2. To promote thought within the student how global and regional organizations play an important role in the development of legal and policy frameworks, as well as in the design of effective action plans to betterment of world Peace and development.
3503	Defence Economics	1. Student will be able to analyze India's defence Expenditure 2. Students can analyze the defence production from 1947. 3. Student can identify the challenges in defence production
3601(A)	India's National Security in 21st Century	1. Students can analyze what are the challenges of India's national security in 21st century and its solution 2. Through various India's strategic polices students will be able understand issues of India’s national security
3601(B)	War and Contemporary Warfare	1. Student can understand the new modern warfare and its process of execution. 2. Student will be able to provide policy input while tackling the New technological and hybrid warfare
3602	International and Regional	1. Student Can analyze the main objective of formation of International and Regional Organization

	Organizations	2. To promote thought within the student how global and regional organizations play an important role in the development of legal and policy frameworks, as well as in the design of effective action plans to betterment of world Peace and development.
3603	Defence Economics	1. Student will be able to analyze India's defence Expenditure 2. Students can analyze the defence production from 1947. 3. Student can identify the challenges in defence production
SOC 3501	Crime and Society G - 3	1. Acquire a broad understanding of the theoretical and empirical approaches taken to understand the relationship between criminal behavior and social, cultural, and institutional forces. 2. Learn about the current state of knowledge regarding social variation crime and reactions to crime and the social consequences of this variation. 3. Critically analyze the conceptual and empirical underpinning of research on the above topics. 4. Identify significant new research questions related to the study of crime in society.
SOC 3502	Social Research Methods S - 3	1. Carry out independent research pertaining to any specific issue 2. Design a research, justifying use of various methods/tools to carry out the same 3. Collect, analyze and interpret both quantitative and qualitative data
SOC 3503	Contemporary Indian Society S - 4	1. Students are able to provide an Introduction of Social Structure & Social Change. 2. Students are able to understand the building of modern India as a nation in its complete complexity. 3. Comprehend the historical context to the current socio-economic trends and problems confronted by Contemporary India.
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YOG 3501	Yoga Vidya – I	1. Enabling and imparting yoga skill in students to practice yoga. 2. Understand the yogic therapy and its application in the field of sport. 3. Understand the yogic principles for healthy life styles. 4. Acquainted the competencies and skills needed to become a professional Yoga resource person.
YOG 3601	Yoga Vidya – II	1. Understand the yogic therapy and its application. 2. Improve physical conditioning related to flexibility through practice of Yoga.

		3. Aware about Spiritual Health through Yoga. 4. Demonstrate a comprehensive understanding of Indian traditional practices and philosophies underlying the concept of Yoga.
LOG 3501	LOGIC: Methodology of Social Science	1. To know and remember specific facts, terms concepts, principles or theories 2. To understand, interpret, compare, contrast, explain III. To apply knowledge to new situations to solve problems using required knowledge or skills 3. To create something, to integrate ideas into a solution, to propose an action plan, to formulate a new classification scheme
LOG 3601	LOGIC: Methodology of Social Science	1. To know and remember specific facts, terms concepts, principles or theories 2. To understand, interpret, compare, contrast, explain III. To apply knowledge to new situations to solve problems using required knowledge or skills 3. To create something, to integrate ideas into a solution, to propose an action plan, to formulate a new classification scheme
SAN3501	संस्कृत भाषा प्रबोध:- १	• रामायण-महाभारत या आर्षमहाकाव्यांचा आणि प्राचीन भारतीय जीवनपद्धतीचा परि चय • संस्कृत भाषेतील प्राचीन तसेच आधुनिक संस्कृत काव्यांच्या व्याप्तीचे आकलन • भाषिक कौशल्यांचे इतर वि षयांच्या अभ्यासासाठी पूरक घटक म्हणून उपयोजन
SAN3601	संस्कृत भाषा प्रबोध: -२	•संस्कृत नाट्यशास्त्राचा परि चयअभि जात व आधुनि क संस्कृत नाटकांमधील फरक आणि त्या फरकांची कारणमीमांसा करण्याची क्षमता • संस्कृत नाटकांमधील मानवी भावभावनांचे चित्रण व त्यांचेमहत्त्व जाणून घेण्याची क्षमता • प्राचीन हस्तलिखि तांचे संरक्षण आणि तत्संबंधी वि ज्ञानवादी दृष्टीकोनाचा वि कास • संस्कृतमध्ये व्यवसाय अथवा नोकरी करण्यासाठी आवश्यक असणाऱ्या कौशल्यांची माहि ती

Outcome – F.Y.B.Com.

Name of Course	Paper Code	Paper Name	Outcome
Commerce	COMCE1101	Comp. English	• It will offer good pieces of prose and poetry so that students can realize the beauty and communicative power of English • It will introduce them to native cultural experiences and situations. • 3. It will enhance linguistic competence and communicative skills among the students
Commerce	COMFE 1101	Functional English I	• It will introduced students to the literary world and the creative use of language. • It will enable them critical appreciate the literary pieces of writing. • 3. It will expose students to literary experiences and relate them to the outside human world.

Commerce	COMFA 1102	Financial Accounting I	• The course structure of this paper would equip the students to get in-depth knowledge of financial accounting along with its practical application thereby giving an opportunity to gain easy access to this competitive business world.
Commerce	COMPBE 1103	Business Economics (Micro) I	• The main outcome of this course is to expose Students of Commerce to basic Micro Economic concepts and inculcate an analytical Approach to the subject matter.
Commerce	COMPBS 1104A Or	Business Stat. I	• The main outcome of this course is to acquaint students with initial description of the data as part of a more extensive statistical analysis by using some elementary statistical methods.
Commerce	COMED1104B	Entrepre. Development I	• This course will offer the fundamentals of starting and operating business. It will provide special opportunities for women entrepreneurs. The students can understand the traits and qualities of entrepreneurs.
Commerce	COMBF1105	Banking & Finance - I	• The main outcome of the syllabus would be the understanding of basic banking operations and principles of banking.
Commerce	COMPCP1106A Or	Cons. Protection and Business Ethics I or	• This will help the students to make them aware about the concept of consumerism and rights of consumer. It would also enable the students about various laws related to consumer protection in India.
Commerce	COMMS1106B	Marketing & Salesmanship I	• This will help the students to get in depth knowledge of marketing and salesmanship and its application in today's world. It would also enable the students to acquaint the recent trends in the field of marketing.
Commerce	COMAE1107A	Additional English - I	• It will offer good pieces of prose and poetry so that students can realize the beauty and communicative power of English • It will introduce them to native cultural experiences and situations. • 3. It will enhance linguistic competence and communicative skills among the students
Commerce	COMMAR1107B	उपयोजित मराठी	• कार्यालयात प्रशासकीय व्यवहार करताना विद्यार्थ्यांना मराठीचा बिनचूक आणि प्रभावी वापर करता येईल
Commerce	COMHIN1107C	सामान्य हिंदी	• छात्रों में राष्टभाषा के प्रति प्रेम निर्माण होगा । • साहित्य के द्वारा नैतिक मुल्य आत्मसात होंगे । • छात्रों में व्यावसायिक दृष्टि विकसित होगी । • समाज में अच्छे इंसान बनने की प्रवृत्ति विकसित होगी । • हिंदी भाषा अभिव्यक्त तार्किक समझ को बढावा देते हुए छात्रों में अपनी राय अभिव्यक्त करने में सहायता मिलेंगी ।

Commerce	COMFE 1201	Functional English II	• It will introduced students to the literary world and the creative use of language. • It will enable them critical appreciate the literary pieces of writing. • It will expose students to literary experiences and relate them to the outside human world.
Commerce	COMFA 1202	Financial Accounting II	• The course structure of this paper would equip the students to get in-depth knowledge of financial accounting along with its practical application thereby giving an opportunity to gain easy access to this competitive business world.
Commerce	COMPBE 1203	Business Economics (Micro) II	• The main outcome of this course is to expose Students of Commerce to basic Micro Economic concepts and inculcate an analyticalApproach to the subject matter.
Commerce	COMPBS 1204A Or	Business Stat. II	• The main outcome of this course is to acquaint students with initial description of the data as part of a more extensive statistical analysis by using some elementary statistical methods.
Commerce	COMED1204B	Entrepre. Development II	• This course will help to understand problems and challenges related to entrepreneurship. The students can come to know various governmental institutions providing facilities to entrepreneurs. The students can prepare project report for their business.
Commerce	COMBF1205	Banking & Finance - II	• The main outcome of the syllabus would be the understanding of basic banking operations and principles of banking.
Commerce	COMPCP1206A Or	Cons. Protection and Business Ethics II	• This will help the students to make them aware about the concept of consumerism and rights of consumer. It would also enable the students about various laws related to consumer protection in India.
Commerce	COMMS1206B	Marketing & Salesmanship II	• This will help the students to get in depth knowledge of marketing and salesmanship and its application in today‟s world. It would also enable the students to acquaint the recent trends in the field of marketing.
Commerce	COMAE1207A	Additional English - II	• It will offer good pieces of prose and poetry so that students can realize the beauty and communicative power of English • It will introduce them to native cultural experiences and situations. • It will enhance linguistic competence and communicative skills among the students
Commerce	COMMAR1207B	उपयोजित मराठी – २	• कार्यालयात प्रशासकीय व्यवहार करताना विद्यार्थ्यांना मराठीचा बिनचूक आणि प्रभावी वापर करता

			येईल
Commerce	COMHIN1207C	सामान्य हिंदी भाग – २	• छात्रों में राष्टभाषा के प्रति प्रेम निर्माण होगा । • साहित्य के द्वारा नैतिक मुल्य आत्मसात होंगे । • छात्रों में व्यावसायिक दृष्टि विकसित होगी । • समाज में अच्छे इंसान बनने की प्रवृत्ति विकसित होगी । • हिंदी भाषा अभिव्यक्त तार्किक समझ को बढावा देते हुए छात्रों में अपनी राय अभिव्यक्त • करने में सहायता मिलेंगी ।

Course Outcome – S.Y.B.Com.

Name of Course	Paper Code	Paper Name	Outcome
Commerce	COMBC2301	Business Communication - I	• This course will be helpful to understand the concept and process of business communication. It will develop awareness regarding various methods and channels of business communication. • It will provide special knowledge of various soft skills applying in business communication. The students can understand about job application letters and how to write resumes
Commerce	COMCAC2302	Corporate Accounting I	• The course will help the students to get a thorough knowledge about corporate accounting. It would also enable the students to know about application of accounting standards, concept of holding and subsidiary companies. • It will also help the students to make valuation of shares of companies through learning various methods of valuation.
Commerce	COMBEC2303	Business Economics (Micro) I	• Students would be able to understand the functioning and interlink ages amongst macro-economic variables. • The course will equip the students with the tools to understand the behaviour of the economy. • The students would be able to they would be able to apply economic reasoning to problems of the economy.
Commerce	COMBM2304	Business Management I	• The course will help the students to get a thorough knowledge about Business Management. • This will provide an understanding about various functions of management. • This will also help to equip students with the attitude that they need for effective business management.
Commerce	COMCL2305	Elements of Company Law I	• This Course help to getting the knowledge of fundamentals of Company Law, update the knowledge of provisions of the Companies Act of 2013, impart students the various concepts, provisions and procedures under company law.
Commerce	COMMM2306A	A) Marketing Management - I	• This course will understand the concept and process of marketing management. It will develop awareness regarding current marketing

			environment in India. • It will provide special knowledge of various communication media applying in marketing communication. The students can understand about the retail marketing skills.
Commerce	COMCWA2306B	B) Cost & Works Accounting - I	• Explain the basic concept of cost and how costs are presented in financial statements • Describe how cost accounting is used for decision making and performance evaluation. • To provide knowledge of Material Control, purchase procedure and purchase documentation
Commerce	COMBF2306C	C) Banking and Finance I	• The main outcome of this course is acquaint students with various new concept of Banks and modern technology in banking. • There will be practical and practical examinations for the special subjects at S.Y.B.Com.and T.Y.B.Com. Levels. • A Student must offer the same Special Subject at T.Y.B.Com. which he has offered atS.Y.B.Com. 3) Every semester has three practicals and practical examination.
Commerce	COMBS2306D	D) Business Statistics – I	• Learn techniques & applications of Statistical Methods and Operations Research with real life situations. • Learn business situations with real life situations. • Learn vital rates for in real life situations. • Learn preparation of life tables for real life situations.
Commerce	COMBC2401	Business Communication - II	• This course will offer and understand the layout, essential qualities of business letters. • The students can come to know various types of business letters and drafting of these letters. • It will provide knowledge of various types of reports and how to write reports. It will develop the awareness about new technologies in business communication and how to operate it in the business communication.
Commerce	COMCAC2402	Corporate Accounting II	• The course will help the students to get knowledge about corporate accounting procedure such as reconstruction of companies, amalgamation and absorption of companies.

			• It would also enable the students to know the procedure of liquidation or winding up of companies. • This course will also help the students to make aware about the use of tally accounting software in companies for recording inventory as well as payroll accounting and generation of reports.
Commerce	COMBEC2403	Business Economics (Micro) II	• Students would be able to understand the functioning and interlink ages amongst macro-economic variables. • The course will equip the students with the tools to understand the behaviour of the economy. • The students would be able to they would be able to apply economic reasoning to problems of the economy
Commerce	COMBM2404	Business Management II	• The course will help the students to adopt the right leadership style based on the exigencies of the situation. • This will provide an understanding about recent trends in business management. • This will also help to enhance the knowledge and skills of students with changing business environment.
Commerce	COMCL2405	Elements of Company Law II	• This Course help to getting the knowledge the duties and responsibilities of Key Managerial Personnel, understanding the companies meeting procedures under company law, understanding the companies winding up
Commerce	COMMM2406A	A) Marketing Management – II	• This course will orient the students for recent trends in marketing management. It will create awareness regarding eco friendly products in India. • It will provide special knowledge of e-marketing in competitive environment. • The students can understand about the retail marketing planning and market information system.
Commerce	COMCWA2406B	B) Cost & Works Accounting - II	• Demonstrate how materials, labor and overhead costs are added to a product at each stage of the production cycle. • Describe materials control and material control procedures • Describe the special labor cost problems that exist and how accounting can help to solve them.
Commerce	COMBF2406C	C) Banking and Finance II	• The main outcome of this course is acquaint students with various new

			concept of Banks and modern technology in banking. • There will be practical and practical examinations for the special subjects at S.Y.B.Com. and T.Y.B.Com. Levels. • A Student must offer the same Special Subject at T.Y.B.Com. which he has offered atS.Y.B.Com. • Every semester has three practicals and practical examination.
Commerce	COMBS2406D	D) Business Statistics - II	• Learn techniques & applications of Statistical Methods and Operations Research with real life situations. • Learn business situations with real life situations. • Learn the concept of time series

Course Outcome – T.Y.B.Com.

Course Code	Course Name	Course Outcomes
COMBRF3501	Business Regulatory Framework	1. This course will be helpful to understand the concept and process of business laws. 2. It will develop awareness regarding various amendments of business and mercantile laws. 3. It will provide special knowledge of various laws affecting of trade and commerce.
COMAA3502	ADVANCED ACCOUNTING – I	1. The course will help the students to get knowledge about the application of different accounting standards. 2. The course would also enable the students to know the procedure and different legal provisions regarding preparation of final accounts of banking companies. 3. It will help to create awareness among students about limitations of incomplete records. 4. It would also enable the students to understand the procedure of conversion of incomplete records (single entry system) into double entry system. 5. It will help the students to make aware about the conceptual aspects of Accounting by E-commerce Entities.
COMIE3503	International Economics- I	1. The main outcome of this course is to familiarize classical and modern theories of international trade. 2. The main outcome of this course is to update student about international transactions or to elaborate the status of exchange market
COMA3504	AUDITING	1. The course will help the students to get knowledge about the concept of auditing. 2. The course will help the students to get knowledge about the application of different Auditing and Assurance Standards. 3. The course would also enable the students to know the process of vouching, verification and valuation of various assets and liabilities. 4. It would also enable the students to understand the different provisions regarding role, responsibility, rights, appointment, reappointment, and removal of an auditor. 5. It will help the students to make aware about the conceptual aspects of Tax Audit. 6. The course will help the students to make them aware about the recent trends in auditing like Green Audit and Human Resource Audit.
COMCWA3505B	Cost and Works Accounting Paper: III	1. To identify the allocation and apportionment of overheads 2. To understand different methods of absorption of overheads. 3. To understand meaning of activity-based costing and its practical application. 4. To know the uses and application of Job and Batch Costing
COMCWA3506B	Cost and Works Accounting Paper: IV	1. To know the applications of marginal costing in decision making. 2. To understand the concept of standard costing and analysis of variances. 3. To know the concept and types of budgets and concept of budgetary control. 4. To understand prospects of cost accounting standards.
COMMM 3505A (Optional Paper)	Marketing Management Special Paper III	This course will understand about the Marketing planning and sales forecasting. It will develop awareness regarding marketing research. It will provide special knowledge of Target Marketing. The students can understand about the marketing control skills through advertising budget

COMMM3506 A (Optional Paper)	Marketing Management (Semester V)	The course will help the students to get knowledge about advertising. It would also enable the students to know the advertising media. This course will also help the students to make aware about the various approaches in advertising and it will help to develop brand marketing skills.
: STAT-3505 D	Business Statistics II	1. Learn the concept of probability 2. Understand standard discrete distributions with real life situations. 3. Learn Bivariate discrete random variable and probability distribution.
STAT-3506 D	Business Statistics III	1. Understand the philosophy and basic concepts of quality improvement 2. Develop a report that describes the solving techniques, analyze the results and propose recommendations to the decision-making process. 3. Understand the mathematical tools that are needed to solve optimization problems.
COMBF3506C	Banking Law and Practices in India-I (Spl_3)	The main outcome of this course is acquainting students with various Banking Laws that Exist in the Banking sector.
: COMBF3507C	Financial Markets in India (Spl-4)	1. Learners will be able to explain functions of money and measurement of money supply. 2. Learners will understand the banking system and its functioning in India. 3. Learners will understand the nature of banking business and business practices. 4. Learners will understand the important recent trends in Foreign Exchange Market.
COMBRF3601	Business Regulatory Framework	1. This course will be helpful to understand the concept and process of business laws. 2. It will develop awareness regarding various amendments of business and labour laws. 3. It will provide special knowledge of various laws affecting of trade and commerce regarding trade and commerce.
COMAA3602	ADVANCED ACCOUNTING – II	1. The course will help the students to get knowledge about the Accounts of Cooperative Societies. 2. The course would also enable the students to know the procedure and different legal provisions regarding preparation of final accounts of Co-operative Societies. 3. It will help to create awareness among students about the conceptual aspects of different recent trends in the field of accounting especially forensic accounting, accounting of CSR activities, accounting of derivative contracts and real estate transactions. 4. It would also enable the students to understand the procedure and methods of analysis of financial statements. 5. It will help the students to make aware about the conceptual aspects of Accounting under GST.
COMIE3603	International Economics- II	1. The main outcome of this course is to familiarize classical and modern theories of international trade. 2. The main outcome of this course is to update student about international transactions or to elaborate the status of exchange market.
COMT3604	TAXATION	1. The course will help the students to get knowledge about the various concepts and terminologies used in Income Tax Act. 2. The course will help the students to get knowledge about the computation of taxable income under different heads. 3. The course would also enable the students to know the deductions available from gross total income. 4. It would also enable the students to understand the calculation of total taxable income & tax liability.

		5. It will help the students to make aware about the conceptual aspects of GST. 6. The course will help the students to make them aware about the tax credit available under GST and different forms of return.
COMCWA3605B	Cost and Works Accounting	1. To understand the concepts of job and unit costing. 2. To know the applications of process costing and joint product and by product accounting. 3. To understand procedure of contract costing and its practical implementation. 4. To identify meaning of service costing and its application.
COMCWA3606B	Cost and Works Accounting	1. To understand the concept of standard costing and analysis of variances. 2. To know the concept and types of budgets and concept of budgetary control. 3. To understand prospects of cost accounting standards.
COMMM3605A Optional Paper	Marketing Management (Semester VI)	This course will understand the concept of Industrial Marketing. It will develop awareness regarding social marketing. It will provide special knowledge of agriculture marketing. The students can understand about the International marketing.
COMMM3606B Optional Paper	Marketing Management (Semester VI)	This course will understand the role of Marketing Organization. It will develop awareness regarding marketing strategies. It will provide special knowledge of marketing regulations. The students can understand about the Globalization and marketing.
COMBF3606C	Banking Law and Practices in India-II (Spl_3)	The main outcome of this course is acquainting students with various Banking Laws that exist in the Banking sector.
COMBF3607C	Regulation of NBFI's in India (Spl_4)	1. Learners will be able to explain functions of money and measurement of money supply. 2. Learners will understand the banking system and its functioning in India. 3. Learners will understand the nature of banking business and business practices. 4. Learners will understand the important recent trends in Foreign Exchange Market.

Course Outcome – F.Y.B.Sc.

Name of Course	Paper Code	Paper Name	Outcome
Physics	PHY1101	Paper - I - Mechanics & Properties of Matter	• On successful completion of this course students will be able to do the following: Understand the concepts of energy, work, power, conservation of energy and be able to perform calculations using them. • Understand the concepts of elasticity and be able to perform calculations using them. • Understand the concepts of surface tension and viscosity and be able to perform calculations using them. • Use of Bernoulli's Principle in real life examples. • Demonstrate quantitative problem solving skills in all the topics covered.
Physics	PHY1102	Paper - II - Electromagnetics	• On successful completion of this course students will be able to do the following: Demonstrate and understand the electric force, field, potential and related concepts for stationary charges. • Calculate electrostatic field and potential of simple charge distributions using Coulomb's law and Gauss's law. • Demonstrate and understand the dielectrics and effect of dielectric on electric field. • Demonstrate and understand the magnetic field for steady currents using BiotSavart and Ampere's law. • Understand the concept of magnetization of materials. • Demonstrate quantitative problem solving skills in all the topics covered.
Physics	PHY1103	Paper - III - Practical- I	• After successfully completing this laboratory course, the students will be able to do the following: Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. • Demonstrate an ability to collect data through observation and/or experimentation and interpreting data. • Demonstrate an understanding of laboratory procedures including safety and scientific methods. • Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena. • Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.

Chemistry	CHEM1101	Paper - I - Physical and Inorganic Chemistry -I	• This course makes understanding of use of mathematical concepts in chemistry, correlation in chemical variables graphically. • Students should able to know states of matter, properties associated and measurement. Also the concepts like mole, molecular weight, equivalent weight, GMV relationship, standardization of solution and balancing the redox reactions should be understood.
Chemistry	CHEM1102	Paper- II - Organic and Inorganic Chemistry -I	• This course makes understanding of structure, bonding, properties and reactivity of organic molecules. • Students are able to draw of organic molecules with arrow pushing concept, IUPAC names, and methods of preparation of organic compounds. • Students should know structure, nomenclature, preparation and reactions of organic compounds and use of possible reagents. • Students should know details about S block elements.
Mathematics	MAT1101	Paper I - Algebra	• Use this algebraic structures & technique for further learning and problem solving in Mathematics.
Mathematics	MAT1102	Paper II - Calculus-I	• To apply these concepts for advance study in Mathematics (Real Analysis, Complex Analysis, topology) & as tools or applications in physical, chemical, biological sciences.
Mathematics	MAT1103	Paper III - Practical- I	• Lead students to learning and improving their understanding of the Mathematics
Statistics	STAT1101	Paper I - Descriptive Statistics -I	• The main outcome of this course is to acquaint students with initial description of the data as part of a more extensive statistical analysis by using some elementary statistical methods.
Statistics	STAT1102	Paper II - Discrete Probability and Probability Distributions - I	• To distinguish between random and non-random experiments. • To find the probabilities of various events. • To obtain probability distribution of univariate discrete random variables.
Statistics	STAT1103	Paper III - Practical- I	• At the end of this course students are expected to be able Represent statistical data diagrammatically and graphically. • Compute various measures of central tendency, dispersion, moments, skewness and kurtosis. • Compute correlation coefficient, regression coefficients and to interpret the results. • Interpret summary Statistics of computer output.
Botany	BOT1101	Paper - I - Plant Diversity	• Conservation of Biodiversity. Producing experts in identification of cryptogams and

			phanerogams.
Botany	BOT1102	Paper - II - Applications of Botany -I	• Development of enterprisers and inculcate business oriented culture.
Microbiology	MICRO1101	Paper I - introduction to Microbiology - I	• The major outcome is the understanding of basic principles and applied aspects of Microbiology and basic techniques of handling of Microbiology. • Theory supplemented with extensive laboratory expertise will help to work directly in applied fields (industry or institutions), without any additional training. • The trained and skilled man-power.
Microbiology	MICRO1102	Paper - II - Basic Techniques in Microbiology- I	
Zoology	ZOO1101	Paper - I - Animal Systematics and Diversity -I	• Imparts conceptual knowledge of Animals, their adaptations and associations in relation to their environment. • Students understand the distinguishing characters and learn to identify the Non-chordate animals. • Students acquire knowledge of Vermiculture practice and its application in day to day life. • Students acquire knowledge about Sponge fishery. • Contributes the knowledge for conservation and sustainable use of Biodiversity.
Zoology	ZOO1102	Paper - II - Fundamental of Cell Biology	• Students understand the distinguishing characters of Pro & Eukaryotic Cells. • Understand the basic structure & functions of Cell & organelles. • Understand the basic process of cell division & distinguish between its types. • Understand the basic techniques of cell identification & separation of cellular contents. • Students acquire skills helpful for the advance studies.
Electronics	ELE1101	Paper- I - Basic Circuit Elements & Theorems	• Students are familiar with basic circuit elements and passive components now they can understand DC circuit theorems and their use in circuit analysis, characteristic features of semiconductor components and elementary electronic circuits and applications.
Electronics	ELE1102	Paper - II - Logicgates and Arithmetic Circuits	• Students are familiar with concepts of digital electronics, number systems and their representation. They also understand basic logic gates, boolean algebra, k-maps and arithmetic circuits.
Env.Sci.	EVS1101	Fundamentals of Environmental Science - I	• Imparts conceptual knowledge of environment, their adaptations and interrelationship. • To understand the distinguishing characters of ecological adaptations.
Env.Sci.	EVS1102	Fundamentals of	

		Environmental Biology - I	• Study of biodiversity and apply that knowledge in day to day life. • Students acquire knowledge about bioresources. • Contributes the knowledge for conservation and sustainable use of Biodiversity.
Comp. Sci.	CSCO1101	Basic Programming Using C	• Problem solving and programming capability
Comp. Sci.	CSCO1102	DBMS-I	• Master the basics of database concepts and database management system • Model an application's data requirements using conceptual modeling tools like ER model, relational model. • Write SQL commands to create tables, insert, update, delete and querying data.
Comp. Sci.	CSCO1103	Lab Course – I (Basic C)	• Problem solving and programming capability
Comp. Sci.	CSCO1104	Lab Course – II (DBMS I)	• To know the DBMS Concepts and to operate Database Software.
Comp. Sci.	CSCO1201	Advanced Programming using C	• To develop advanced as well as Graphics programming capability.
Comp. Sci.	CSCO1202	DBMS-II	• Develop the database design by normalization. • Knowing functional dependencies and design of the relational database. • Design concept of Transaction and Query processing.
Comp. Sci.	CSCO1203	Lab Course –I (Advanced C)	• Problem solving and programming capability and develop Advanced as well as Graphics programming capability.
Comp. Sci.	CSCO1204	Lab Course – II (DBMS II)	• To know the RDBMS Concepts and to operate Database Software.
Comp. Sci.	CSEL1101	Circuit Theory and network Analysis –I	• Students are familiar with basic circuit elements, passive components and DC circuit theorems and their use in circuit analysis. Also they understand elementary electronic circuits and applications.
Comp. Sci.	CSEL1102	Fundamentals of Digital Electronics	• Students are familiar with concepts of digital electronics, number systems and their representation. They also understand basic logic gates, boolean algebra, k-maps and arithmetic circuits.
Comp. Sci.	CSEL1201	Semiconductor Devices and Memories	• Students can understand characteristic features of semiconductor devices, elementary electronic circuits and applications. They also understand basics of basics of Memories.
Comp. Sci.	CSEL1202	Sequential Circuits Design	• Students are familiar with concepts of digital circuits, combinational and sequential circuits. Also they understand logic families and IC technology,
Comp. Sci.	CSST-1101	Statistical Methods I	• The main outcome of this course is to acquaint students with initial description of the data as part of a more extensive statistical analysis by using some elementary statistical methods.

Comp. Sci.	CSST-1102	Probability and some discrete probability distributions	• Students are expected to be able, To distinguish between random and non-random experiments. • To find the probabilities of various events. • To obtain probability distribution of univariate continuous random variables. • To use distributions in real life situations.
Comp. Sci.	CSST-1103	Practical-I	• At the end of this course students are expected to be able Represent statistical data diagrammatically and graphically. • Compute various measures of central tendency, dispersion, moments, skewness and kurtosis. • Compute correlation coefficient, regression coefficients and to interpret the results. • Interpret summary Statistics of computer output.
Comp. Sci.	CSST-1201	Statistical Methods II	• Students are expected to be able, To apply discrete probability distributions studied in this course in different situations. • Know some standard discrete probability distributions with real life situations. • How to fit the regression model to the given bivariate data
Comp. Sci.	CSST-1202		• The main outcome of this course is to use statistical software and testing of hypothesis.
Comp. Sci.	CSST-1203	Practical-II	• At the end of this course students are expected to be able Compute regression coefficients and to interpret the results. • Analyze the data with respect to Bivariate discrete and continuous distributions .
Physics	PHY1201	Paper - I - Heat and Thermodynamics	• After successfully completing this course, the student will be able to: Describe the thermodynamic properties of a material. • Understand the ideal gas equation and its limitations. • Understand the real gas equation. • Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process. • Understand principle of heat engines and calculate thermal efficiency. • Understand the principle of the refrigerators to calculate coefficient of performance • Understand phenomenon of ‘entropy’ • Understand the types of thermometers and their uses
Physics	PHY1202	Paper - I - Electromagnetics	• On successful completion of this course students will be able to do the following: Understand the mathematical description of travelling and standing waves.

			• Recognize the one-dimensional classical wave equation and its solutions. • Calculate the phase velocity of a travelling wave. • Understand the concept of Doppler Effect. • Explain in qualitative terms how frequency, amplitude, and wave shape affect the pitch, intensity, and quality of tones produced by musical instruments. • Understand the phenomena like reflection, refraction, diffraction, dispersion. • Understand construction and working principle of optical instruments.
Physics	PHY1203	Paper - III - Practical- II	• After successfully completing this laboratory course, the students will be able to do the following: Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. • Demonstrate an ability to collect data through observation and/or experimentation and interpreting data. • Demonstrate an understanding of laboratory procedures including safety and scientific methods. • Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena. • Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.
Chemistry	CHEM1201	Paper - I Physical and Inorganic Chemistry -II	• This course makes understanding of assumptions of Bohr model, atomic spectra, Schrödinger equation for hydrogen atom and related mathematical calculations. • Students should able to know elementary chemical thermodynamics, laws and state functions used in thermo chemical calculations. • Student should able to understand basic principle and concepts of overlapping of atomic orbital focusing on VSEPR theory for simple molecules.
Chemistry	CHEM1202	Paper. II - Organic and Inorganic Chemistry -II	• This course makes understanding of concept of isomerism, types of isomers and their stereochemistry and R/S configuration in compounds containing two Chiral centers. • Students are able to use different reagents in organic synthesis. • Students should know details about P- block elements.
Mathematics	MAT1201	Paper I - Geometry	• Apply appropriate formulas and tools to determine measurements and use these techniques in real life context and other disciplines
Mathematics	MAT1202	Paper II - Calculus-II	• To apply these concepts for advance study in Mathematics (Real Analysis, Complex Analysis, topology) & as tools or applications in physical, chemical, biological

			sciences.
Mathematics	MAT1203	Paper - III - Practical- II	• Improving problem solving skill of students
Statistics	STAT1201	Paper I -Descriptive Statistics -II	• Students are expected to be able, 1 Compute the correlation coefficient for bivariate data and interpret it. 2 Fit linear, quadratic and exponential curves to the bivariate data to investigate relation between two variables. 3 Applications of demography in the field of insurance, government etc.
Statistics	STAT1202	Paper II - Discrete Probability and Probability Distribitions - II	• Students are expected to be able, To apply discrete bivariate probability distributions studied in this course in different situations. • Distinguish between discrete variables and study of their distributions. • Know some standard discrete probability distributions with real life situations. • Understand concept of bivariate distributions and computation of related probabilities.
Statistics	STAT1203	Paper - III - Practical- II	• At the end of this course students are expected to be able to Analyze the data with respect to Bivariate discrete distributions and. • Know applications of some standard discrete probability distributions.
Botany	BOT1201	Paper - I -Angiosperm Morphology	• Development of plant taxonomists and expert in identification of local flora.
Botany	BOT1202	Paper - II -Applications of Botany -II	• Produce the agro-industrialist.
Botany	BOT1203	Paper - III - Practical- II	• Creation of expert technologist and biodiversity conservator
Microbiology	MICRO1201	Paper - I - introduction to Microbiology - II	• The major outcome is the understanding of basic principles and applied aspects of Microbiology and basic techniques of handling of Microbiology. • Theory supplemented with extensive laboratory expertise will help to work directly in applied fields (industry or institutions), without any additional training. • The trained and skilled man-power.
Microbiology	MICRO1202	Paper - II -Basic Techniques in Microbiology- II	
Zoology	ZOO1201	Paper - I Animal Systematics and Diversity -II	• Imparts conceptual knowledge of Animals, their adaptations and associations in relation to their environment. Students understand the distinguishing characters of and learn to identify the Chordate animals. Contributes the knowledge for conservation and sustainable use of Biodiversity. Imparts conceptual knowledge of Animals, their adaptations and associations in relation to their environment.
Zoology	ZOO1202	Paper - II - Genetics	• Students understand the basic Mendelian & non-Mendelian Genetics. • Students acquire knowledge of Genetic disorders, syndromes etc.

			• Students understand importance of Genetics & its applications for human welfare. • Students acquire Genetical Problem Solving Ability.
Electronics	ELE1201	Paper- I - Semiconductor Devices	• Students can understand characteristic features of BJT,FET,UJT and learn applications of BJT, FET and UJT as well as basics and applications of operational amplifiers.
Electronics	ELE1202	Paper - II - Digital Circuits and IC Technology	• Students are familiar with concepts of digital circuits, combinational and sequential circuits. Also they understand logic families and IC technology,
Env.Sci.	EVS 1201	Fundamentals of Environmental Science - II	• Imparts conceptual knowledge of environment, their adaptations and interrelationship. • To understand the distinguishing characters of ecological adaptations. • Study of biodiversity and apply that knowledge in day to day life. • Students acquire knowledge about bio resources. • Contributes the knowledge for conservation and sustainable use of Biodiversity.
Env.Sci.	EVS 1201	Fundamentals of Environmental Biology - II	

Course Outcome – S.Y.B.Sc.

Name of Course	Paper Code	Paper Name	Outcome
Optional English	ENG2301(B) ENG2401(B)	Optional English Optional English	• The students understand the nature, function and relevance of Grammar and Vocabulary • The students learn a few masterpieces of English Poetry and Prose • The students use English effectively for their purpose • The students read, appreciate and evaluate prose and poetry independently
Marathi	MAR2301 (A) MAR 2401(A)	मराठी विज्ञान साहित्य आणि व्यवहारीक मराठी	• विद्यार्थ्यांमध्ये मराठी विज्ञानसाहित्या विषयी आवड निर्माण होईल, विद्यार्थ्यांना विज्ञान, उद्योगातील विविध प्रवाह, संधी यांची माहिती होईल, विद्यार्थ्यांना पारिभाषिक संज्ञांची ओळख होईल, भाषिक कौशल्यांचे प्रसारमाध्यमांवरील विविध अविष्कार आणि प्रसारमाध्यमे यांच्या परस्परस बंधांचे ज्ञान होईल, प्रसारमाध्यमांची ओळख होऊन लेखन कौशल्ये विकसित होतील.
English	ENG2301 (B)	Technical English	• 1.The students understand the nature, function and relevance of Grammar and Vocabulary 2. The students learn a few masterpieces of English Poetry and Prose 3. The students use English effectively for their purpose 4. The students read, appreciate and evaluate prose and poetry independently
Physics	PHY 2301(A)	A] Electronics-I	• 1. Apply laws of electrical circuits to different circuits. 2. Understand the properties and working of transistors. 3. Understand the functions of operational amplifiers. 4. Design circuits using transistors and operational amplifiers. 5. Understand the Boolean algebra and logic circuits.
Physics	PHY 2301(B)	B] Instrumentation	• 1. Understand the principles and functions of different instruments. 2. Use different instruments for measurement of various parameters. 3. Design experiments using sensors.
Physics	PHY 2302	Paper - II - Thermal Physics	• Describe the thermodynamic properties of a material. • Understand the ideal & real gas equation • Apply the laws of thermodynamics to formulate the relations necessary to analyse a thermodynamic process. • Understand the principle of the refrigerators to calculate coefficient of performance • dentify and describe the statistical nature of concepts and laws in thermodynamics, in particular: entropy, temperature, chemical potential,

			Free energies, partition functions. • Apply the concepts and principles of black-body radiation to analyse radiation phenomena in thermodynamic systems
Physics	PHY 2303	Paper - III - Practical-I	• Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. • Demonstrate an ability to collect data through observation and/or experimentation and interpreting data. • Demonstrate an understanding of laboratory procedures including safety and scientific methods. • Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena. • Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.
Chemistry	CHEM 2301	Paper -I Physical and Analytical Chemistry	• Students should able to know concept of reaction rate, order of reaction, activation energy and rate theories. • Students should able to understand second law of thermodynamics, entropy calculation. • Students should able to know concept of free energy, chemical equilibrium and response to different factors. • Students should able to know basics of analytical chemistry, concentration methods and calculations in chemical stoichiometry. • Students should able to understand different types of volumetric analysis, their applications and calculations in them. • Students should able to solve related numerical and problems.
Chemistry	CHEM 2302	Paper - II Organic and Inorganic Chemistry	• Students should know the Stereochemistry and mono-substituted cyclohexane • Students should know the Molecular orbital theory, Bond order, stabilization energy and magnetic properties of diatomic molecules. • Students should know that d block elements, trends in properties of d block elements Acids-bases and reactions in solvents. • Students should able to solve related numerical and problems.
Chemistry	CHEM 2303	Paper - III Practical-I	• Students should able to perform physical chemistry experiment, by

			knowing the SOPs and able to interpret it graphically. • Students should able to perform organic qualitative analysis, organic preparation and purification methods for organic substances.
Mathematics	MAT2301	Multivariable Calculus-I	• Learning multivariable calculus will develop skills of students to solve complex problems in mathematics and science
Mathematics	MAT2302	Laplace Transform & Fourier Series	• Able to solve differential equation using Laplace Transform and to calculate Fourier Series of functions.
Mathematics	MAT2303	Practical Based on MAT2301 & MAT2302	• Inculcate problem solving skills in students and understanding applications of Mathematics in science and real life problems. Student will be able to use software in solving problems.
Statistics	STAT2301	Statistical Techniques- I	• Understand discrete distributions with real life situations, Learn Negative and multinomial distributions, Learn truncated distributions, Learn the concept of index numbers and time series.
Statistics	STAT2302	Continuous Probability Distributions-I	• Understand continuous distributions with real life situations, Learn uniform, Normal, exponential and Gamma distributions, Learn Bivariate distributions, Learn the relations among the different distributions, Learn the concept of transformation of continuous random variables which help to study derived distributions.
Botany	BOT 2301	Taxonomy of Angiosperms	• Development of plant taxonomists and expert in identification of local flora.
Botany	BOT 2302	Plant Physiology	• Development of expertise in plant physiology
Botany	BOT 2303	Practical-I	• Development of research attitude in students.
Microbiology	MICRO2301	Bacterial Systematics and Physiology	• Students will learn, how synthesis of ATP take place in cell. • Students will understand the nature and role of metabolic reactions in cell growth. • Students will learn catabolism and energy generation. • Students will understand the Prokaryotic taxonomy.
Microbiology	MICRO2302	Industrial and Soil Microbiology	• To understand the basic idea of designing of fermenter • To get acquainted with the constituents of fermentation media • To understand the role of microorganism in soil microbiology • To make use of microorganisms in development of Biofertilizer, compost and humus etc.

Microbiology	MICRO2303	Practical-I	• To impart the basic skill for biochemical identification of organisms • To get idea about the air flora
Zoology	ZOO2301	Animal Systematics and Diversity - III	• Imparts conceptual knowledge of Animals, their adaptations and associations in relation to their environment. • Students understand the distinguishing characters and learn to identify the Non-chordate animals. • Students acquire knowledge of economic importance of insects. • Contributes the knowledge for conservation and sustainable use of Biodiversity
Zoology	ZOO2302	Applied Zoology-I	• Understand the concepts of fishery, Aquarium maintenance, Agricultural pests & Veterinary science. • Classify freshwater fishes & economically important fishes. • Describe the common Agricultural pests. • Understand the economics & economic importance of self-employment.
Electronics	ELE2301	Analog Circuit Design	• Student can understand basic principles of amplifiers and oscillators also they understand the working of various analog circuits. • They can develop analog circuit design skills and apply the knowledge of analog circuits in different applications.
Electronics	ELE2302	Digital Circuit Design	• Student can utilize k-maps in the design of combinational circuits. Also they understand the design principles of sequential circuits and study the design and working of various data converters, also can configure the digital circuits in system interfacing and applications.
Env.Sci.	EVS 2301	Natural Resources, Energy and their management	• Student understand resources, vermiculture in day to day life, Sponge fishery
Env.Sci.	EVS2302	Environmental pollution and control – I	• Student understanding w.r.t. biofertilizrs, biopesticides, cropping and pest manangment, innovative Ex-situ and In-situ methods of pollution remediation
Comp. Sci.	CSCO 2301	Data Structure Using C	• Use well-organized data structures in solving various problems. Differentiate the usage of various structures in problem solution. Implementing algorithms to solve problems using appropriate data structures.
Comp. Sci.	CSCO 2302	Introduction to Web Technology	• The student will be able to solve simple programs using HTML, CSS & JavaScript.

			• The students will be able to implement modular programming skills learnt to solve complex problems of CSS & JavaScript. • The students will be able to develop Web based pages that are more user friendly. • Students are able to design, develop and deploy a Web based application using HTML, CSS & JavaScript.
Comp. Sci.	CSCO 2303	Lab Course I based On Data structure	• Students learned to calculate time and space complexity of any algorithm. • Understand to compare algorithms. • Learned various data structures and their implementation.
Comp. Sci.	CSCO 2304	Lab Course II based On Web Technology	• Understand different Web technologies. • Keep pace with the rapidly changing landscape of web application development. • Design dynamic and interactive web pages.
Comp.Sci.	CSEL2101	Fundamentals of Memory organization and Embedded System	• Students get knowledge of computer architecture and organization also analyze given processing element, and identify and define the computing requirements. They also design, implement, and evaluate a microcontroller-based system, process, component, or program. They also use current techniques, skills, and tools necessary for Low-Level computing.
Comp. Sci.	CSEL 2102	Analog Electronics	• Students understand basics of analog electronics also they study different types of sensors, different types of signal conditioning circuits and learn data conversion techniques they also apply knowledge of analog systems in different applications.
Comp. Sci.	ELC221	The 8051 Architecture, Interfacing & Programming	• Students can understand the basics of 8051 microcontroller, Programming and interfacing techniques of 8051. They also use knowledge of 8051 to design different application circuits and concepts of advanced Microcontrollers
Comp. Sci.	CSEL2202	Advanced Communication Technique	• Students can understand basics of communication systems, modulation, demodulation and multiplexing of signals and understand digital communication techniques and use the concepts in advanced wireless communication

Physics	PHY 2401	Paper - I - Mathematical Methods of Physics-I	• Understand the complex algebra useful in physics courses • Understand the concept of partial differentiation. • Understand the role of partial differential equations in physics • Understand vector algebra useful in mathematics and physics • Understand the singular points of differential equation • Understand the Functions Fourier series and analysis
Physics	PHY 2402	Paper - II - Elements of Modern Physics	• Demonstrate understanding of the scientific method of work and the evolution of physics from the classical to its modern era. • Demonstrate knowledge and understanding of electric and magnetic phenomena in everyday life. • Discuss the nature of light and the electromagnetic spectrum and outline practical applications. • Demonstrate knowledge of the fundamentals of important physics theories (e.g. relativity, quantum) and discuss the way they challenge our preconceptions. • Explain radioactivity and discuss different aspects of nuclear energy in nuclear reactors and in the universe
Physics	PHY 2403	Paper - III - Practical-II	• Use various instruments and equipment. • Design experiments to test a hypothesis and/or determine the value of an unknown quantity. • Investigate the theoretical background to an experiment. • Set up experimental equipment to implement an experimental approach. • Analyze data, plot appropriate graphs and reach conclusions from your data analysis. • Work in a group to plan, implement and report on a project/experiment
Chemistry	CHEM 2401	Paper - I - Physical and Analytical Chemistry	• Students should able to know details of thermodynamics of ideal solution, Raoult's law, P-X and T-X diagrams, Azeotropes, partially miscible liquids& steam distillation. • Students should able to understand Nernst distribution law, its applications and details about solvent extraction process. • Students should able to know basics of ionic equilibrium, strong & weak electrolytes salt hydrolysis and pH calculations. Concept of common ion, buffer solution solubility product and their applications.

			• Students should able to understand phase equilibrium, Gibbs phase rule, Clausius-Clapeyron equation and phase diagrams of one and two component systems. • Students should able to know errors in analysis, concept of accuracy and types of errors. • Students should able to understand pH & potentiometric applications and details about chromatography and its types. • Students should able to solve related numerical and problems.
Chemistry	CHEM 2402	Paper - II- Organic and Inorganic Chemistry	• Students should know reagents, their reactions and mechanism. • Students should know the biochemical molecules, their importance and reactions. • Student should know basic concept of Coordination Chemistry, the applications, Werner's theory and structure of coordination compounds • Students should know Organometallic Chemistry, cyclic reactions and 18 e rule. • Students should able to solve related numerical and problems.
Chemistry	CHEM2403	Paper - III - Practical-II	• Students should able to perform analytical chemistry experiment, by knowing the SOPs and able to interpret it quantitatively. • Students should able to perform inorganic qualitative analysis, inorganic synthesis and their purity & percentage yield.
Mathematics	MAT2401	Paper - I - Linear Algebra	• Student will able to solve problems on vector spaces, matrices, linear transformation and apply these techniques in other subjects of mathematics, science.
Mathematics	MAT2402	Paper - II - Multivariable Calculus-II	• Student will able to solve problems in integration which are critical in some science subjects. They will enhance ability of problem solving and will improve analytical thinking.
Mathematics	MAT2403	Paper - III - Practical Based on MAT2401 & MAT2402	• Inculcate problem solving skills in students and understanding applications of Mathematics in science and real life problems. Student will be able to use software in solving problems.
Statistics	STAT2401	Paper - I - Statistical Techniques- II	• Use R Software in statistical computing. • Learn Meaning and purpose of SPC. • Construct Control charts for Attributes.

			• Construct Control charts for variables. • Revise control limits whenever necessary. • Apply M/M/1:FIFO Queuing model.
Statistics	STAT2402	Paper - II - Continuous Probability Distributions-II	• Understand Chi-Square distribution, Student's t- distribution, Snedecor's F distribution • Compute mean, mode, variance, moments, cumulants for above Distributions • Learn Exact Sampling Distributions. • Know the relations among the different distributions
Botany	BOT 2401	Paper - I - Anatomy and Embryology	• Awareness about the internal structure and tissue system in plant along with embryogenesis
Botany	BOT 2402	Paper - II - Plant Ecology	• The student can analyse and interpret the plant relation with the environment and impact of human interventions on ecosystem
Botany	BOT 2403	Paper - III - Practical-II	• Students should know the practical applications of anatomy, embryology and ecology in recent advances in plant sciences.
Microbiology	MICRO2401	Paper - I - Air and Water Microbiology	• Students can analyse microflora of air and water and it's methods of enumeration of bacteria.
Microbiology	MICRO2402	Paper - II - Bacterial Genetics	• Students can analyse the basic concepts of Genetics, mutation, Genetic code, DNA Replication etc.
Microbiology	MICRO2403	Paper - III - Practical-II	• Students would know the methods of enumeration of bacteria of water, Potability of water and air their applications.
Zoology	ZOO2401	Paper - I - Animal Systematics and Diversity - IV	• Imparts conceptual knowledge of Animals, their adaptations and associations in relation to their environment. Students understand the distinguishing characters of and learn to identify the Chordate animals. Contributes the knowledge for conservation and sustainable use of Biodiversity. Imparts conceptual knowledge of Animals, their adaptations and associations in relation to their environment.
Zoology	ZOO2402	Paper - II - Applied Zoology-II	• Understand the concepts of fishery, Aquarium maintenance, Agricultural pests & Veterinary science. • Classify freshwater fishes & economically important fishes. • Describe the common Agricultural pests. • Understand the economics & economic importance of self-employment.

Electronics	ELE2401	Electronic Instrumentation	• Students can understand the block diagram of electronic instruments and the working principles of popular instruments. To know important technical specifications of an instruments and learn the operating procedure of instruments.
Electronics	ELE2402	Paper - II - Communication Electronics	• Students can understand basics of communication systems and telephone system and Amplitude Modulation /demodulation techniques and receiver also understand Frequency Modulation /demodulation techniques and receiver and the Digital communication system
Env.Sci.	EVS 2401	Solid and Hazardous Waste Management	• Student understanding
Env.Sci.	EVS 2402	Environmental pollution and control – II	• Contribution of knowledge to control pollution
Comp.Sci.	CSCO 2401	Object Oriented Concepts using Java	• Understand Object Oriented Concepts • Handle different type of Exceptions in program
Comp.Sci.	CSCO2402	Software Engineering	• Students can adopt relevant methods and procedures, An ability to work in one or more significant application, Student Can collect, analyze, and evaluate end user requirement data, Using Soft. Eng. methods students are present and develop their own projects.
Comp.Sci.	CSCO2403	Lab course-I On Programming in Java	• To write programs using Object Oriented Concepts, Write Multithreaded Programs, Handle different type of Exceptions in program.
Comp.Sci.	CSCO2404	Soft. Engineering using Mini Project	• Developing practical skill of designed and developed software. 2. Developing skill of analyzing static and dynamic view of software. 3. Developed practical experience of designed a mini project based on system analysis and design

Course Outcome – T.Y.B.Sc

PHY 3501	Mathematical Methods of Physics-II	1. Learn some mathematical techniques required to understand the physical phenomena at the undergraduate level. 2. The students will solve nonhomogeneous differential equations and partial differential equations using simple methods. 3. The students are expected to be able to solve simple problems on Matrix. 4. Understand the generalized coordinate system and transformation equation between cartesian coordinate and generalized coordinates.
PHY 3502	Classical Mechanics	1. The students will introduce about the newton's laws of motion, linear momentum, angular momentum, and knowledge about the applications of newton's laws of motion. 2. The students should be able to understand central forces and types of central forces in detail, ideas regarding equations of orbit and deduction of Kepler's laws. 3. This paper enables the students to understand the Langrangian approach in classical mechanics. 4. The students should be able to understand theory of scattering, types of scattering and differential cross section.
PHY 3503	Advanced Optics	1. Describe how light can constructively and destructively interfere. 2. Explain why a light beam spreads out after passing through an aperture. 3. Analyze simple examples of interference and diffraction phenomena. 4. Be familiar with a range of equipment used in modern optics.
PHY 3504	Solid State Physics	This syllabus will also help students to lay a foundation for Materials science, electronics, and more advanced subjects like condensed matter in future.
PHY 3505	Atomic and Molecular Physics	1. The application of quantum mechanics in atomic physics 2. The importance of electron spin, symmetric and antisymmetric wave functions, and vector atom model 3. Effect of magnetic field on atoms and its application 4. Learn Molecular physics and its applications. 5. This course will be useful to get an insight into spectroscopy.
PHY 3506	Elective-I (Select anyone) A] Elements of Material Science	1. Students are able to apply knowledge of advanced science and engineering principles to materials systems. 2. Students will demonstrate proficiency in the acquisition of data using a variety of laboratory instruments and in the analysis and interpretation of such data. 3. An ability to apply knowledge of mathematics, science, and engineering to materials issues. 4. An ability to design and conduct experiments and critically analyse and interpret data.
	B] Renewable Energy Sources	1. Know the need of renewable energy resources and latest developments. 2. Use of solar energy in the energy production with different applications like - heating, cooling, desalination, power generation, drying, cooking etc 3. Appreciate the need of Wind Energy and the various components used in energy generation. 4. Understand the concept of Biomass energy resources and their classification
	C] Physics and Technology of sensors	1. Understand the concept of sensors and its characteristics. 2. Understand the practical approach in design of technology based on different sensors. 3. Learn various sensor materials and technology used in designing sensors.
PHY 3507	Practical I	1. The students will have a good foundation in the fundamentals related to the experiments included in this course and their advanced applications. 2. The students will be able to understand the theory related to the experiment and their application in their future

		course of time. 3. The students will get motivated to develop small experiments related to these techniques and develop their physical understanding. 4. The students will be able to learn practically the interference and diffraction 5. The students are expected to get familiarized with various experimental tools and characterization techniques of different experiments in physics.
PHY 3508	Practical II	1. Learning magnetic sensors, magneto resistance hall effect sensors students get knowledge about modern day techniques in Physics. 2. Studying different temperature and electrical measurements the concept of measurements for regular equipment is grown within the students. 3. The students will be able to use the different components and equipment in physics practical. 4. The students will have a good foundation in the fundamentals related to the experiments included in this course and their advanced applications.
PHY 3509	Project I	1. In a specialization domain of his / her choice, student will be able to choose an appropriate topic for study and will be able to clearly formulate & state a research problem. 2. For a selected research topic, student will be able to compile the relevant literature and frame hypotheses for research as applicable. 3. For a selected research topic, student will be able to plan research including the experimental, observational, analytical and operational designs if any. 4. For a selected research topic, student will be able to compile relevant observations, calculated data, interpret & analyze it and test the hypotheses wherever applicable. 5. Student will be able to create a logically coherent project report and will be able to defend his / her work in front of a panel of examiners.
PHY 3601	Classical Electrodynamics	a) Solving electromagnetic problems. b) Students can get idea and able to take interest in the research concerning synthesis & application of dielectrics & Magnetic materials.
PHY 3602	Quantum Mechanics	a) Understand the necessity of Quantum Mechanics. b) Understand the behavior of particles under Classical and Quantum conditions. c) Understand the Operators in Quantum Mechanics. d) Learn about Schrodinger's equations.
PHY 3603	Statistical Physics	a) Understand the relevant quantities used to describe macroscopic systems, thermodynamic potentials and ensembles. b) Understand the concepts of partition functions by taking into account the different types of ensemble. c) Describe the consequences in classical and quantum statistics. d) Embracing the concepts of ideal Bose and fermi systems through the principle of statistical Mechanics. e) Show an analytic ability to solve the statistical mechanics problems.
PHY 3604	Nuclear Physics	a) Upon successful completion of this course, the student will be able to understand the fundamental principles and concepts governing classical nuclear and particle physics and have a knowledge of their applications interactions of

		ionizing radiation with matter the key techniques for particle accelerators the physical processes involved in nuclear power generation. b) Knowledge on elementary particles will help students to understand the fundamental constituents of matter and lay foundation for the understanding of unsolved questions about dark matter, antimatter, and other research-oriented topics
PHY 3605	Electronics II	a) To analyze performance parameters based on study of characteristics of electronic devices like UJT, JFET and their applications. b) To understand opamp circuits and its usefulness in different applications c) To know operating principle of IC 555 in different configurations d) Evaluate frequency response to filter circuits. e) Build and test digital circuits using universal/basic logic gates and flip flops. f) Analyze, design and implement sequential logic circuits.
	Advanced Electronics	1. To familiarize with different sensors. 2. To elucidate sensors and signal conditioning circuits. 3. To explain signal conditioning circuits. 4. To familiarize with process control system and its objectives.
PHY 3606	Elective-II (Select anyone) A] Physics of Nanomaterials	1. Learn about the background on Nanoscience. 2. Understand the synthesis of nanomaterials and their application and the impact of nanomaterials on environment. 3. Apply their knowledge to develop Nanomaterials. 4. Can apply the knowledge to develop new applications.
	B] Solar Energy Conversion Devices	1. The course providing a basic understanding of theory and practice of various photovoltaic technologies and design concepts. 2. To understand the physical principles of the photovoltaic (PV) solar cell 3. Discuss the positive and negative aspects of solar energy in relation to natural and human aspects of the environment.
	C] Sensors and its Applications	1. Apply different methods for the measurement of various physical quantities. 2. Ability to Analyse, formulate and select suitable sensor for the given industrial applications. 3. Describe signal conditioning circuits. 4. Differentiate between different types of smart sensors. 5. Identify various optical transducer.
PHY 3607	Practical III	1.This laboratory course focuses on the advanced physics experiments chosen from Atomic and Molecular Physics, Condensed Matter Physics, Nuclear Physics and Optics. 2.It provides an insight to students about experimental techniques, data analysis, error analysis while investigating the physical phenomena. 3.This course provides practical knowledge to students as they perform experiments and correlate it to theory. 4.This course deals with the study crystal Physics, Energy bands in solid, Ferroelectrics, Films and surfaces.
PHY 3608	Practical IV	1. Students should have expertise in the basic experiments of electronics in the present day demand and hence this course is designed.

		2. The basic filters will help the student to identify how the frequency depend on resistance and how the signals behave with the frequencies. 3. The students can analyse and compare the effect of frequency to the output voltage. 4. The experiments related to operational amplifier makes the students to analyse and working of IC 741 and its characteristics and finding the solution for linear and nonlinear applications using OP-Amp.
PHY 3609	Project II	1. In a specialization domain of his / her choice, student will be able to choose an appropriate topic for study and will be able to clearly formulate & state a research problem. 2. For a selected research topic, student will be able to compile the relevant literature and frame hypotheses for research as applicable. 3. For a selected research topic, student will be able to plan research including the experimental, observational, analytical and operational designs if any. 4. For a selected research topic, student will be able to compile relevant observations, calculated data, interpret & analyze it and test the hypotheses wherever applicable. 5. Student will be able to create a logically coherent project report and will be able to defend his / her work in front of a panel of examiners.
CHEM -3501	Physical Chemistry- I	Knowing the various terms such as molar refraction, electrical polarization of molecule, induced and orientation polarization, dipole moment and its experimental determination, Application of dipole moment for structure determination. Understanding the Rotational / Microwave spectroscopy, Derivation and Limitations of Rotational Spectra, Vibrational Spectra, Vibrational rotational Spectra, Raman Spectroscopy. Knowing the various terms such asspecific resistance, specific conductance, cell constant, its units and theoretical and experimental determination, conductivity water, equivalent conductance, Variation of specific and equivalent conductance with dilution, equivalent conductance at infinite dilution. Learning the Kohlrausch's law of independent migration of ions and its applications Transport number and its experimental determination, Hittorf's rule., Debye-Huckel-Onsager Interionic Attraction theory, Validity of Onsager equation, Fugacity and activity concept, Activity and activity coefficient of strong electrolyte. Knowing the interaction of radiation with matter, thermal and photochemical processes, laws of photochemistry, Jablonski diagram, fluorescence, phosphorescence, non- radiative processes, determination of quantum yield, photosensitized reactions, Kinetics of photo chemical reaction, Understanding the meaning of colloidal system, types of colloids, lyophobic and lyophilic sols, Tyndall effect, Brownian movement, surfactants, emulsions, gels, importance and applications of colloids. Imparting and improving the ability of students towards thinking, reasoning and solving the numerical based on related topics.
CHEM -3502	Inorganic Chemistry-I	Knowing the various terms involved in coordination chemistry, application the co-ordination compounds. Understanding the Werner's theory and various types of isomerism in complexes. Selecting the correct geometry for complexes with C.N. 4 and C.N. 6 with the help of stereoisomerism. Use of EAN rule to calculate EAN value of the complexes and relationship between EAN value and stability of complexes. Knowing the details of Sidgwick's theory and formation of square planar, tetrahedral, trigonal bipyramidal and octahedral complexes. Identifying the structure and magnetic behavior of the complexes, the high spin and low spin complexes, the inner orbital and outer orbital complexes, elctroneutrality principle and different types of pi bonding. Knowing the limitations of VBT, the

		shapes of d-orbitals and degeneracy of d-orbitals, the assumptions of CFT, crystal field splitting diagrams, calculation of 10 Dq value. Knowing the details about high spin and low spin complexes, d-d transitions and color of the complexes, Jahn-Teller distortion, Nephelauxatic effect towards covalent bonding, MOT of Octahedral complexes with sigma bonding and Charge Transfer Spectra. Understanding the different approaches to bonding in coordination compounds.
CHEM -3503	Organic Chemistry-I	Understanding the strength i.e strong or weak acid or base and factors responsible for their strength. Learning stereochemistry of the di-substituted cyclohexane with their stereoisomers and stability. Knowing the kinetic, mechanism and stereochemistry of aliphatic substitution reactions and differences between them. Understanding types of elimination reaction with mechanism. Understanding a particular elimination reaction follow particular path. Learning and knowing an aromatic compound shows mostly electrophilic substitution reactions. Under special condition also shows some nucleophilic reactions. Effect and orientation of monosubstituted aromatic compounds. Knowing formation and stability with some reactions involving carbanion as intermediate. Understanding principles and importance of green route for organic synthesis by concerning environmental issues
CHEM -3504	Analytical Chemistry-I	Learning and knowing details about common ion effect and solubility product, super saturation and precipitation, electro gravimetric principle, numerical on gravimetric estimation. Knowing the Methods of TGA and DTA. Thermal equation of TGA, Different factors affecting TGA curve, Applications of TGA, DTA and DSC. Related numerical. Learning the principles and terms of Spectrophotometric analysis, Statement and derivation of Lambert's Law and Beer's Law, Instrumentation, working and applications of single and double beam spectrophotometer. Numerical. Knowing the Voltammetry and polarography as an analytical tool, Construction, working, advantages and disadvantages of DME. Details about Ilkovic equation. Applications Determination of Zn and Cd from the mixture. Numericals. Learning the details about Emission spectroscopy, methods involves and applications. Knowing the AAS as an analytical tool, measurement of absorbance, Interferences in atomic absorption spectroscopy, Applications.
CHEM -3505	Industrial Chemistry-I	Basic requirements of Chemical Industry, different terms, operations and processes involved in chemical Industry. Describe Copy Right Act, Patent Act and Trade Marks, Bureau of Indian Standards (BIS) and International Organization for Standardization (ISO). Page 27 of 70. Manufacture of industrial heavy chemicals Learning and understanding of physicochemical principles of production of ammonia, sulfuric acid, nitric acid along with its manufacturing plant. Fertilizers different types of fertilizers (N, P and K). Importance of fertilizers, chemistry involved in the manufacture of the following fertilizers: urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates, superphosphate of lime, potassium chloride and potassium nitrate. Basic requirements, raw materials, different processes and operations involved in Sugar Industry and also different grades of sugar and uses of by-products of sugar industry. Importance of fermented products, basic requirements, theory and process of alcohol making, fractional distillation and various terms involved in Fermentation Industry. Basic requirements, raw materials, different processes and operations involved in cement Industry and also burning operation involved in cement industry. Basic requirements, raw materials, different processes, and operations involved in the manufacture of glass Industry Importance of glass industry products. Basic requirements of small-scale chemical Industry, different chemical products such as Naphthalene balls, Wax Candles, Shoe Polishes, Gum Paste, Writing and fountain Pen ink, Plaster of Paris, along with its manufacturing plant.

CHEM- 3506	(A)Nuclear Chemistry- I	Learning and knowing details about the atom, elementary particles, sub-nucleons and the quarks, classification of nuclides, isotopes, isobars, isotones and isomers, factors affecting nuclear stability and quantum numbers. Understanding the Shell model, the liquid drop model and semi-empirical mass equation. Learning the types of radioactive decay, decay kinetics and their general characteristics, nuclear isomerism, isomeric transitions, internal conversion, Auger effect. Understanding the Bethe's notation, types of nuclear reactions, conservation in nuclear reaction, compound nucleus theory.
CHEM- 3506	(B)Polymer Chemistry-I	Understanding history, names and various methods of nomenclature of polymers, difference between (a) simple compound and polymer, (b) natural and synthetic polymers (c) organic and inorganic polymers. Knowing the terms -monomer, polymer, polymerization, degree of polymerization, functionality, number average, weight average molecular weight, mechanisms of polymerization, polymerization techniques, importance of silicone polymers. Understanding the cellulose polymers – derivatives and applications, Ingredients and fillers, Polymer reactions.
CHEM- 3506	(C)Introduction To Biochemistry and Molecular Biology-I	Understanding the cell types- bacterial cell., plant cell and animal cell. Biological composition and organization of cell membrane, Singer and Nicholson model. Biomolecules and macromolecules. Knowing the carbohydrates and their biochemical significance, structure, properties and reactions of carbohydrates with glucose as example. Learning the details about, lipids, amino acids, proteins, enzymes and vitamins. Understanding the details in biochemical studies, basic concepts of Endocrinology. Endocrine glands and their hormones.
CHEM- 3506	(D)Environmental and Green Chemistry-I	Knowing the importance and conservation of environment, atmosphere, Hazards of flue gases, Ozone depletion, Ecological changes and related social issues. Understanding the water resources, potable water, WHO limits, Quality measures. Learning the details of green chemistry technology for sustainable developments
CHEM- 3506	(E) Agriculture Chemistry	Understanding the role of agriculture chemistry and its potential, basic concept, properties &classification of soil on the basis of pH Knowing the details of plant nutrients, importance of manures, green manuring, various techniques to protect the plants. Learning about pesticides, insecticides, fungicides and herbicides, problematic soil and reclamation. Knowing details about irrigation water, water quality standards and analysis.
CHEM- 3506	(F) Synthesis of Nanomaterials and Nano toxicology	Knowing and understanding the process of synthesis of nanomaterials using different chemical pathways. Learning the use of microorganisms, plant extract, proteins, and DNA in biological synthesis of nanomaterials. Understanding the toxicological properties of nanoparticles onbiological systems and the environment.
CHEM- 3507	Physical Chemistry Practical-I	Understanding the principle, theory, preparation of required chemicals, procedure, experimental methodology, calculations and interpretations in quantitative instrumental and non-instrumental analysis. Developing the experimental and operational skill with hands on training using sophisticated instruments and practicing for mathematical and graphical interpretation
CHEM- 3508	Inorganic Chemistry Practical- I	Knowing the safe working methods and safety standards in laboratory. Undertaking the correct route in inorganic preparations, gravimetric and colorimetric estimations and flame photometric determinations.
CHEM- 3509	Organic Chemistry Practical - I	Separating and analyzing the water-soluble and water- insoluble binary mixture. Estimating - Acetamide, Glucose and Glycine by volumetric method. Estimating basicity of various acids. Understanding TLC and purification techniques used in organic synthesis.
CHEM -3601	Physical Chemistry- II	1. Recognize the electrochemical processes, evaluate electrodes and cells. Express the electrodes materials and discuss electrode potentials and cell thermodynamics. 2. Understand and explain the concept of ionizing radiation and distinguish between the three different types

		of radiation. 3. Understand and explain the concept of isotopic stability including the band of stability. 4. Define and explain surface- and interfacial phenomena. describe and explain different types of colloidal systems. 5. Apply the de Broglie formula and related concepts to assess whether a system can be reliably described by CM or not. 6. Identify chemical systems and processes where CM gives a completely adequate description and chemical systems and processes where CM fails entirely to describe reality and where QM is needed.
CHEM -3602	Inorganic Chemistry-II	Knowing the various terms involved in F block elements,Ionic solids, application the semiconductor compounds. 2. Understanding the merits and demerits Homogenous and heterogenous catalysis 3. Selecting the correct structures of ionic solids
CHEM -3603	Organic Chemistry-II	Students will learn the principle of mass spectroscopy, its instrumentation and nature of mass spectrum. 2. Students will understand the principle of UV spectroscopy and the nature of UV spectrum. They will learn types of electronic excitations. 3. Students will be able to calculate maximum wavelength for any conjugated system. And from the value of λ-max they will be able to find out the extent of conjugation in the compound. 4. Students will understand the principle of IR spectroscopy, types of vibrations and the nature of IR spectrum. 5. From the IR spectrum, they will be able to find out IR frequencies of different functional groups. And thus, they will be able to find functional groups present in the compound. 6. Students will understand the principle of NMR spectroscopy and will understand various terms used in NMR spectroscopy. They will learn measurement of chemical shift and coupling constants. 7. Students will be able to interpret the NMR data and they will be able to use it for determination of structure of organic compounds. 8. Students will be able to determine the structure of simple organic compounds on the basis of spectral data such as λ max values, IR frequencies, chemical shift (δ values).
CHEM -3604	Analytical Chemistry-II	Define basic terms in solvent extraction, basics of chromatography, HPLC, GC, Electrophoresis and Nephelometry and Turbidimetry. Some important terms are: solvent extraction, aqueous and organic phase, distribution ratio and coefficient, solute remain unextracted, percent extraction, ion association complex, theoretical plate, HETP, retention time, selectivity, resolution, stationary phase, normal and reverse phase, ion exchange, column efficiency, carrier gas. 2. Identify important parameters in analytical processes or estimations. Example: minimum analyte concentration in particular method, reagent concentration for particular analysis, reagent for particular analysis, reaction condition to convert analyte into measurable form, wavelength selection in HPLC with spectrophotometric and fluorometric

		detector, solvent or carrier gas in HPLC and GC 3. Explain different principles involved in the analyses using solvent extraction, basics of instrumental chromatography, HPLC, GC Electrophoresis and Nephel ometry and Turbidimetry. 4. Perform quantitative calculations depending upon equations students has studied in the theory. Furthermore, student should able to solve problems on the basis of theory. 5. Discuss / Describe procedure for different types analyses included in the syllabus. 6. Select particular method of analysis if analyte sample is given to him. 7. Differentiate / distinguish / compare among the different analytical terms, process and analytical methods. 8. Demonstrate / explain theoretical principles with help of practical. 9. Design analytical procedure for given sample. 10. Apply whatever theoretical principles he has studied in theory during practical in laboratory
CHEM -3605	Industrial Chemistry-II	➢ Basic requirements of industrial organic synthesis in industry, different terms, operations and processes involved in organic synthesis. ➢ Manufacture of industrial heavy chemicals Learning and understanding of Treatment of wastes or effluents with inorganic impurities. The nature, effect and treatment of some important chemical wastes. ➢ Uses of Methyl orange, Malachite green, phenolphthalein, Rosaniline, crystal violet, Florescence, Alizarin, Indigo. Pigments: Introduction, classification, and general physical properties nitrate. ➢ Basic requirements, raw materials, different processes and operations involved in pharmaceutical industry and also different grades by-products of industry. ➢ Importance of pharmaceutical industry, basic requirements, theory and process of pharmacutical industry. ➢ Basic requirements, raw materials, different processes and operations involved in pharmaceutical industry and also burning operation involved in pharmaceutical industry. Basic requirements, raw materials, different processes, and operations involved in the manufacture of pharmaceutical industry. Importance of glass industry products. ➢ Basic requirements of pharmaceutical industry, different chemical products such as methanol, propylene, acetone, aspirin and paracetemol along with its manufacturing plant.
CHEM- 3606	(A)Nuclear Chemistry-II	➢ Learning and knowing details about the atom, elementary particles, sub-nucleons and the quarks, classification of nuclides, isotopes, isobars, isotones and isomers, factors affecting nuclear stability and quantum numbers. ➢ Understanding the Shell model, the liquid drop model and semi-empirical mass equation. ➢ Learning the types of radioactive decay, decay kinetics and their general characteristics, nuclear isomerism, isomeric transitions, internal conversion, Auger effect. ➢ Understanding the Bethe's notation, types of nuclear reactions, conservation in nuclear reaction, compound nucleus theory.
CHEM- 3606	(B)Polymer Chemistry-II	History of polymers.

		2) Difference between simple compounds and polymer. 3) Names of polymers. 4) Various ways of nomenclature. 5) Difference between natural, synthetic, organic and inorganic polymers. 6) Terms-Monomer, Polymer, Polymerization, Degree of polymerization, Functionality, Number average, Weight average molecular weight. 7) Mechanisms of polymerization. 8) Polymerization techniques. 9) Uses & properties of polymers. 10) Role of polymer industry in the economy. 11) Advantages of polymers
CHEM- 3606	(C)Introduction to Biochemistry and Molecular Biology-II	1. Concepts of biomolecules, Bonds that link monomeric units to form macromolecules 2. The student will understand the types of carbohydrates and their biochemical significance in living organisms. 3. The students will understand the structure of carbohydrates and reactions of carbohydrates with Glucose as example. Properties of carbohydrates. 4. The student needs to know the types of lipids with examples, structure of lipids, properties of lipids 5. The student will understand the structure and types of amino acids. Reactions of amino acids. Properties of amino acids. Peptide bond formation. Types of proteins. Structural features in proteins. Effect of pH on structure of amino acid, Determination of N and C terminus of peptide chain. 6.The student know the classes of enzymes with subclasses and examples. 7. The enzyme specificity, Equations of enzyme kinetics Km and its significance, features of various types of enzyme inhibitions, industrial applications of enzymes. 8. Types of Endocrine glands and their hormones. Biochemical nature of hormones. Mechanism of action of lipophilic and hydrophilic hormones
CHEM- 3606	(D)Environmental and Green Chemistry-II	➢ Knowing the importance of green house gases, Ozone depletion, global warming and related social issues. ➢ Understanding the importance and chemistry of water, hydrologic cycle, Bodies of water and life in water and Chemical process in water. ➢ Applying the Green engineering and energy conversion efficiency, Conversion of chemical energy, Renewable energy sources in day to day life. Learning the details of green chemistry technology for sustainable developments
CHEM- 3606	(E) Dairy Chemistry	➢ Describe the composition ,structure and properties of the major constituents of milk ➢ Understanding the role of dairy chemistry and its potential, basic concept, properties & classification of milk on the basis of pH Summarise the key factors influencing milk composition,quality and functionality ➢ .Knowing the details of milk, importance of manures,
CHEM- 3606	(F) Environmental	➢ Knowing and understanding the process of synthesis of nanomaterials using different chemical pathways.

	Nanotechnology and Applications	➢ Learning the use of microorganisms, plant extract, proteins, and DNA in biological synthesis of nanomaterials. Understanding the toxicological properties of nanoparticles on biological systems and the environment.
CHEM- 3607	Physical Chemistry Practical-II OR (P): Project work Physical Chemistry	1. Understanding the principle, theory, preparation of required chemicals, procedure, experimental methodology, calculations and interpretations in quantitative instrumental and non-instrumental analysis. 2. Developing the experimental and operational skill with hands on training using sophisticated instruments and practicing for mathematical and graphical interpretation
CHEM- 3608	Inorganic Chemistry Practical-II OR (P): Project work Inorganic Chemistry	➢ Separating and analyzing the water-soluble and water- insoluble binary Inorganic mixture. ➢ Estimating – Mn,No_2^- phosphate, copper by volumetric method ➢ Understanding coloumn chromatography technique
CHEM- 3609	Organic Chemistry Practical – II OR (P): Project work Organic Chemistry	Perform the quantitative chemical analysis of binary mixture. 2. Explain principles of chemical analysis of binary mixture 3. Separate, purify and analyse binary water insoluble mixture. 4. Separate, purify and analyse binary water-soluble mixture. 5. Understand the techniques involving drying and recrystallization by various method. 6. Familiarize the test involving identification of special elements. 7. Learn the confirmatory test for various functional groups. 8. Familiarise the preparation of organic compounds by using various methods.
BOT3501	Cryptogamic Botany (Algae, Fungi, Bryophytes and Pteridophytes)	1) Students can be confident about basic idea and comparative study of cryptogams. 2) Students can be experts in identification of lower plants. 3) Students can be start their own business based on applications of cryptogams.
BOT3502	Spermatophyta and Palaeobotany	1. Understanding the concepts of Gymnosperms, Angiosperm and Palaeobotany. 2. Knowledge of different families, classification systems. 3. Understanding the tools of taxonomy.
BOT3503	Cell and Molecular Biology	1. The main outcome of this course is to acquaint students with some cytological techniques. 2. Experts required in future for genetic library of plants. 3. Acquaint the students with synthesis of nucleic acids and PCR technique.
BOT3504	Industrial Botany	1. Preparation of different garden at personal level and to encourage people 2. Hands on techniques of packaging, harvesting and hydroponics. 3. Students can start their own business in cold storage, packing of flowers and fruits
BOT3505	Biostatistics	1) Students will be expert in use of computer to solve biological problems. 2) Students can be master in solving biological problems with the help of statistics. 3) Students will apply their knowledge in various branches of biology.
BOT3506	Research Methodology	1. Comprehensive knowledge in research areas. 2. Knowledge of preparation of Manuscript, Review article and Project Report.

		3. Students will understand the basics of research.
BOT3507	Practical based on BOT3501 to BOT3503	1 It will help to conserve the biodiversity of lower and higher plants. 2 Students will get job in gene bank, gene mapping and bioinformatics disciplines. 3 Students get expertise in identification of plants.
BOT3508	Practical based on BOT3504 to BOT3506	1. Students can start their own business by using this techniques. 2. Data analyser will be expert to conclude the significance of biological experiments. 3. Students will understand the basics of research.
BOT3509	BOT3509	1. Information acquired about research work 2. Getting of awareness of innovative methodology. 3. Significant conclusions and outputs.
BOT3601	Plant Physiology and Biochemistry	1. Use knowledge for improvement of agricultural yield 2.Students aware about the plant to response environmental conditions. 3. Students get knowledge of internal activities in plant.
BOT3602	Plant Biotechnology	1) Learn the basic concepts, principles and techniques in plant biotechnology. 2) Knowledge acquired students will be able to apply techniques in other branches such as biological, medical, agricultural etc. 3) Use of bio techniques to explore plant to its molecular level.
BOT3603	Genetics and Plant Breeding	1. Students get knowledge of genetical heredity. 2. Students become expertise in Plant Breeding Techniques. 3. Get knowledge for improving the new crop variety.
BOT3604	Plant Pathology	1) Students can be understood the details of meteorological factors and pathogens involved in disease development. So, it will help as prerequisite for avoiding the disease spreading. 2) Knowledge of plant pathology will helpful to use diseases resistant varieties of crop plants and their disease management. 3) Students can be start their own business related to eco-friendly management of plant diseases and its consultancy.
BOT3605	Pharmacognosy	1. Knowledge of traditional and alternative systems of medicines. 2. To increase desire Ayurveda. 3. Knowledge of drug adulteration and its evaluation methods. 4. Awareness of herbal drugs cultivation methods, collection, processing and marketing. 5. Vision of scientific approach towards Ayurveda.
BOT3606	Botanical Techniques	•The course will provide a comprehensive knowledge on various techniques for understanding and exploring the plants for their bio potential. On satisfying the requirements of this course, students will have the knowledge and skills on • Principal and types of microscopes, microtomes and various types of stains, solutions • Various advanced methods for estimation of plant based molecules • Techniques of analysis of soil and water samples
BOT3607	Practical based on BOT3501 to BOT3505	1 Students will be expert in tissue culture techniques. 2 Students can get employment in agro-industries. 3 Expertise of students in plant pathogenecity will help to identify and eradicate pathogens which will help to

		enhance plant production.
BOT3608	Practical based on BOT3601 to BOT3606	1. Students can get employment in agro-industries. 2. Expertise of students in plant pathogenecity will help to identify and eradicate pathogens which will help to enhance plant production. 30 3. Student get expertise in soil and water analysis.
BOT3609	Project	1. Information acquired about research work 2. Getting of awareness of innovative methodology. 3. Significant conclusions and outputs.
ZOO 3501	ANIMAL SYSTEMATICS & DIVERSITY-V	•Imparts conceptual knowledge of Animals, their adaptations and associations in relation to their environment. • Students understand the distinguishing characters and learn to identify the Nonchordate animals. • Students acquire knowledge of economic importance of insects. • Contributes the knowledge for conservation and sustainable use of Biodiversity
ZOO 3502	MAMMALIAN HISTOLOGY	➢Learners will be able to understand the histology of mammals and its functions. ➢ Learners would appreciate the well planned organization of tissues and cells in the organ systems. ➢ Learner will be able to understand the Ovarian Follicles, Corpus luteum, Corpus albicans & Structure of an Ovum. ➢ Learners become aware about the Histological Structures of various Endocrine Organs, Cell types & Hormones Secreted by them, their functions in the Mammalian systems. ➢ Course helps to inculcate the research aptitude among the students.
ZOO 3503	BIOCHEMISTRY	➢An understanding of fundamental biochemical principles. ➢ It helps to improve knowledge of biomolecules. ➢ Understand basic principle of acid and base . ➢ Understand basic principle of pH, Buffer, titration and biological buffer. ➢ An understand the structure/function of biomolecules. ➢ Understand basic principle of enzymes and enzyme kinetics. ➢ Biological and Clinical significance of biomolecules likes carbohydrates, amino acids, protein and lipids. It makes base for further research study
ZOO 3504	ENVIRONMENTAL BIOLOGY & TOXICOLOGY	•Students understand the basic concepts in environmental biology. • Students understand the components of ecosystems and their interactions. • Students understand the types of ecosystems, reasons of their degradation, ways of their conservation. • Students understand the types of pollution, their reasons and thereby control measures. • Students acquire the knowledge of environmental monitoring, role of various bioindicators, etc. • Students understand the basic concepts in toxicology like LC50, LD50.
ZOO 3505	PARASITOLOGY	•Student gets the knowledge about various branches of Parasitology and the scope of subject in the career. • Students become aware about various types of parasites and hosts and thereby try to remain free from parasites. • Student understands the host-parasite relationship so that it can implement the strategies to control the parasite infection.

		• Becomes aware about endoparasites. With this knowledge, it spreads the awareness in society about infection chances, preventive measures and treatment. • Increases awareness about infections and control measures of ectoparasites like head louse, tick, mite, mosquitoes. • Acquires in depth knowledge about zoonotic diseases like bird flu, rabies and toxoplasmosis. This knowledge helps it to spread the awareness about preventive measures and treatments of these diseases. • Updates the knowledge about epidemic disease like typhoid, cholera and small pox. This knowledge helps it to spread the awareness about preventive measures and treatments of these diseases.
ZOO 3506	A] CELL BIOLOGY or	•Students understand the distinguishing characters of Pro & Eukaryotic Cells. • Students will Understand the basic structure & functions of Cell & organelles. • Students will Understand the basic process of cell division & distinguish between its types. • Students will Understand the basic techniques of cell identification & separation of cellular contents. • Students will Understand Animal cell culture and its applications in the medicine. • Students will understand Antigen – Antibody & Cell mediated Immune responses. • Students acquire skills helpful for the advance studies.
	B] GENERAL PATHOLOGY	1. Students will able to identify the fundamental causes and mechanisms of disease, and the associated alterations in the structure and function of cells, tissues, organs and systems. 2. Students will describe basic mechanisms of cellular pathology, including cell injury, necrosis, and cellular adaptations. 3. Students will able to describe the etiology and classification of inflammatory responses, and the mechanisms involved in healing and repair. 4. Students will able to devise likely diagnoses from clinical scenarios by recognizing key manifestations of congenital, hemodynamic, inflammatory, infectious, metabolic, environmental, and neoplastic diseases. 5. Students will able to apply knowledge of pathology's role in the diagnosis, staging, and management of disease. 6. Students will able to utilize high quality peer-reviewed literature to maintain currency in the management of pathologic conditions.
ZOO 3507	ZOOLOGY PRACTICAL-V (Related to ZOO 3501, 3502)	1. Outline the systematic position of Pila & Calotes. 2. The student will be able to label the organs and systems of Pila and Calotes. 3. The student will be able to understand asexual reproduction in sponges through gemmules. 4. Illustrate the morphological peculiarities of Heart, Kidney and Brain of vertebrates 5. Students are able to distinguish the permanent histological slides of different types of tissues. 6. 2. Students make a temporary slide preparation of striated muscle fiber, stratified epithelial cells and medullated nerve fiber. 7. 3. Students acquire the skill of making the blood smear and identifying different types of lymphocytes such as neutrophils, eosinophil, basophil and monocytes.
ZOO 3508	ZOOLOGY PRACTICAL-VI (Related to ZOO 3503, 3504)	• Students understand the methods of field collection, preservation and identification of planktons • Students learn various water quality parameters, their measurement using analysis kit and importance. • Student learn methods of estimating LC50 and LD50. • It helps to student to understand about acidic, basic and neutral nature of chemicals.

		• It helps to know about how the enzyme activity is dependent on different factors. • Understand about application of different techniques in biomolecules separation. • Understand about conversion and preparation of standard solutions. • It helps to understand methods for estimation of protein, carbohydrates.
ZOO 3509	ZOOLOGY PRACTICAL-VII (Related to ZOO 3505, 3506)	➢Students will learn how to detect mitochondria by using 'Janus Green B' Stain. ➢ Students will learn & identify the different stages of mitosis & meiosis by using readymade permanent slides. ➢ Students will learn how perform the temporary preparation of mitotic stages in onion root tip cells. ➢ Students will learn the role of Colchicine on mitosis (cell cycle). ➢ Students will learn the temporary preparation of different meiotic stages from grasshopper testis / Tradescantia/ Onion floral bud. ➢ Students will learn how perform the viability of cell by using Trypan Blue dye. ➢ Students will learn Splenectomy & its significance. ➢ Students learn the morphology & life cycle of protozoan & helminth parasites. ➢ Students become aware about the spreading of diseases by different arthropods. ➢ Students can identify the different vectors responsible for spreading of diseases. ➢ Students will learn the dissection, collection and mounting of endoparasites.
ZOO 3601	BIOLOGICAL TECHNIQUES	Understand basic principle of chromatography, Electrophoresis, centrifuge and spectroscopy • Understand basic method of solutions preparation and different strength. • Ability to use specific laboratory tools and techniques (e.g. effective use of microscopes and lab instruments, handling of microorganisms, making up solutions). • Ability to use Hematological tools and techniques (Hemoglobin meter, haemocytometer, total count of WBCs and RBCs manually). • Understand basic concept of histological technique and tissue slide preparation. • Understand fixative, clearing agent, hydration and dehydration agent etc. • Basic principle of tissue block making and problem in section cutting • Understand staining methods. • Basic technique of histochemistry and Immunohistochemistry. • Understand the application of computer and biological databases in research.
ZOO 3602	MAMMALIAN PHYSIOLOGY & ENDOCRINOLOGY	• The various physiological organ-systems and their importance to the integrative functions of the human body. • Understand Concept of energy requirements • Various aspects of Digestive physiology. • Circulatory system with medical conditions • Understand Respiratory mechanism and gases transport. • Eliminations of waste materials from the body. • Develop understanding in Structure and functions of muscles • Understand formation of gametes and function of endocrine glands.

ZOO 3603	GENETICS & MOLECULAR BIOLOGY	• Students shall get an insight into the Structure of DNA and RNA, DNA and RNA as genetic material • The course shall prepare learner to get insight into the Central Dogma of Molecular Biology • Students understand the concepts like mutation, its types and mutagens. • Students shall also understand related areas in relatively new fields of genetic engineering • Students shall get acquainted with the vast array of techniques used to manipulate genes which can be applied in numerous fields like medicine, research, etc. for human benefit.
ZOO 3604	ORGANIC EVOLUTION	• Students get the basic knowledge of origin and evolution of life, origin of eukaryotic cell origin of mitochondria, plastids as symbionts. • Students become aware about Theories of organic evolution Such as Lamarckism, Darwinism and Neo Darwinism, Mutation Theory and Modern Synthetic theory. • Students will get the knowledge of pre-zygotic and post-zygotic isolation mechanisms. • Students will understand the process of speciation and the factors influencing speciation. • Students learn the basic co-evolutionary mechanism. • Students become aware of Geological Time Scale and the evolution of man.
ZOO 3605	GENERAL EMBRYOLOGY	• Learners will be able to understand the processes involved in embryonic development and it Applications. • Students will come to know mechanisms related to embryonic developments. • They will know about recent trends in developmental biology.
ZOO 3606	A] MEDICAL ENTOMOLOGY or	• Students understand the meaning of entomology, its various branches & importance in human life. • Students can identify various body divisions and appendages of insect. • Students can identify the insects of veterinary importance & their control. • Students can identify the insects of medical importance & their control. • Students understand the meaning of insect pests of agricultural & household importance. • Students become aware about methods of pest control & concept of IMP. • Students become aware about careful observation of insect life cycle & its application in forensic field
	B] PUBLIC HEALTH & HYGIENE	• Students will able to identify the fundamental causes and mechanisms of disease, and the associated alterations in the structure and function of cells, tissues, organs and systems. • Students will describe basic mechanisms of cellular pathology, including cell injury, necrosis, and cellular adaptations. • Students will able to describe the etiology and classification of inflammatory responses, and the mechanisms involved in healing and repair. • Students will able to devise likely diagnoses from clinical scenarios by recognizing key manifestations of congenital, hemodynamic, inflammatory, infectious, metabolic, environmental, and neoplastic diseases. • Students will able to apply knowledge of pathology's role in the diagnosis, staging, and management of disease. • Students will able to utilize high quality peer-reviewed literature to maintain currency in the management of pathologic conditions.
ZOO 3607	ZOOLOGY PRACTICAL-VIII (Related to ZOO 3601, 3602, 3603)	• Understand basic principle of camera lucida. • Understand basic methods of tissue collection, fixation and block making. • Ability to use specific laboratory tools and techniques for the preparation of permanent histological slides of

		tissues. • Ability to use Hematological tools and techniques (Total and differential count of WBCs manually). • Understand basic concept of blood smear slide preparation. • Understand Basic principle and applications of colorimeter and spectrophotometer. • Understand the separation of biomolecules by ascending paper chromatography. • Understand the application of online tools for search of biological information/literature . • Learners will be familiar with various laboratory techniques and equipment used in the attainment of physiological data. • Students will learn the estimation haemoglobin, blood glucose estimation. • Learners will be able to measure the lung capacity. • Students acquire the skill of handling the pH meter and use it to measure pH. • Students acquire the skill of assessing the enzyme activity. • Students learn the preparation of standard acid, base and their standardization. • Students acquire the practical skill of dissecting the dipteran larvae to isolate polytene chromosome and its temporary slide preparation. • Student will able to know about laboratory safety methods and skill of instrument handling • Student will be able to understand the principle of Hardy- Weinberg law. • Student will learn the method for DNA estimation. • Student will able to isolate the genetic material from biological sample. • Student will be able to understand the principle and working of electrophoresis.
ZOO 3608	ZOO 3608	• Students will understand the adaptive radiation and how man has evolved from ape. • Students will get to know various kinds of fossils. • Students will understand the important characteristics and adaptations in animals. • Students will understand that present day organisms are the result of organic evolution. • Students will study the characteristic features and geographical distribution of human ancestors. • Students will get to know the distribution of animals according to the ecological conditions and adaptations. • Students will be able to design phylogenetic tree by morphological characteristics of organisms. • Students will the learners to the basics of embryology with reference to chick as a model. • Students will learn technique related to Ex-ovo culture of chick embryo. • Students will be able to understand difference between embryonic development of Amphioxus, frog, hen. • Students may develop the ability to identify the insect pests. • Students will develop the laboratory skills of insect dissection, slide preparation, etc. • Students develop the knowledge about various methods & appliances of pest control. • Students become aware about social life of insects, importance of division of labour, mutual cooperation, etc.
ZOO 3609	Minor Research Project (Compulsory)	1. Student surveys & collects information of research work. 2. Students understand the importance of research work in sustenance of environment. 3. Students develop the habit of critical thinking. 4. Students become aware about innovative methods in research.

		5. Students become able to come to objective conclusions through critical thinking & research. 6. Students can apply foundational research skills to address a research problem. 7. Students develop the habit of planning & time management. 8. Students acquire the leadership skills. 9. Students acquire the skill of collaborative work. Research Project: Projects will be allotted to students based on theory papers of Semester – V & VI. The project course would involve:1. Training to students in: a) Literature survey, b) Planning and execution of experimental work, c) Analysis of data and its presentation. • Project will start at sixth semester and will be assessed at the end of sixth semester. • The experimentation work / surveys for the project work will be equivalent to minimum 10 practicals in the semester.
MICRO3501	MEDICAL MICROBIOLOGY-I	➢Build up progressive and successful career. ➢ Apply the knowledge to identify and diagnose pathogenic microorganisms ➢ Understands defense mechanism of human body system & different mechanisms of disease transmission ➢ Apply knowledge of various methods to control diseases
MICRO3502	GENETICS AND MOLECULAR BIOLOGY- I	1.Understand the genome organization in prokaryotic cell and eukaryotic cell 2. Learn the molecular mechanism involved in DNA replication. 3. explain the molecular mechanism involved in gene expression. 4. Discuss the different types of mutations and corresponding DNA repair mechanisms 5. Apply the Bacteriophage growth kinetics in calculation of Eclipse period, latent period and burst size
MICRO3503	ENZYMOLOGY	➢Students will learn about structure and function of Enzymes. ➢ Students will show experience with Purification, handling and characterization of proteins
MICRO3504	IMMUNOLOGY – I	Theoretical understanding of basic immunological processes. 2. Each student would be able to understand immune mechanism of our body. 3. Students would be able to apply his knowledge to society for human welfare. 4. Establishment and development as an entrepreneur.
MICRO3505	FERMENTATION TECHNOLOGY-I	1. Theoretical understanding of principles and basic protocols of industrial processes. 2. Laboratory exercises shall help the students to directly work in different divisions of industries. 3. Acquaintance to the several quality control tests that results into well-trained and skilled man power. 4. Establishment and development as an entrepreneur.
MICRO3506	FOOD AND DAIRY MICROBIOLOGY	✓ Students will learn about various methods regarding milk and milk product as well as food sanitation and regulation ✓ Students will learn the concepts of applied microbiology
MICRO3507	APPLIED MICROBIOLOGY - I	1 It will help to conserve the biodiversity of lower and higher plants. 2 Students will get job in gene bank, gene mapping and bioinformatics disciplines. 3 Students get expertise in identification of plants.
MICRO3508	BIOCHEMISTRY	1. Students can start their own business by using this techniques.

		2. Data analyser will be expert to conclude the significance of biological experiments. 3. Students will understand the basics of research.
MICRO3509	CLINICAL MICROBIOLOGY	1. Information acquired about research work 2. Getting of awareness of innovative methodology. 3. Significant conclusions and outputs.
MICRO3601	MEDICAL MICROBIOLOGY-II	1.Build up progressive and successful career. 2.Apply the knowledge to identify and diagnose pathogenic microorganisms. 3.Understands different mechanisms of chemotherapeutic agents to control diseases & pathogens
MICRO3602	GENETICS AND MOLECULAR BIOLOGY- II	1. Understand the different mode of gene transfer in prokaryotic cell 2. Understand the concept of recombination 3. use the recombination for gene mapping. 4. Solve problems based on mapping 5. Apply the recombinant DNA technology for generation of engineered DNA
MICRO3603	METABOLISM	1. Students will learn about Structure and function of cell membrane 2. To understand function of specific anabolic and catabolic pathways
MICRO3604	IMMUNOLOGY – II	1. Theoretical understanding of basic immunological processes. 2. Each student would be able to understand immune mechanism of our body. 3. Students would be able to apply his knowledge to society for human welfare. 4. Establishment and development as an entrepreneur
MICRO3605	FERMENTATION TECHNOLOGY-II	1. Theoretical understanding of principles and basic protocols of large-scale industrial production processes. 2. Laboratory exercises shall help the students to directly work in different divisions of industries. 3. Acquaintance to the several industrial production processes that results into welltrained and skilled man-power. 4. Establishment and development as an entrepreneur.
MICRO3606	AGRICULTURAL AND ENVIRONMENTAL MICROBIOLOGY	1. Acquaintance about plants mechanism for disease resistance will improve. 2. Understanding different techniques in agriculture to control diseases in plant. 3. Students will become familiar with different concepts of environmental microbiology 4. Application of different biofertilizers and biopesticides in field their importance over chemical fertilizer and pesticides will be understood by students.
MICRO3607	APPLIED MICROBIOLOGY - II	1. Students will learn about different techniques in Molecular biology &Biochemistry 2. They will acquire knowledge about enzyme purification methods and understand factors affecting enzyme reaction 3. They will gain expertise in isolation and estimation of genomic DNA 4. Students' knowledge will grow up with isolation and enumeration of bacteriophage.
MICRO3608	MOLECULAR BIOLOGY	1. Students will develop the knowledge of principle and procedure of blood grouping , cross matching 2. They will get acquainted with qualitative detection of Hepatitis B surface virus 3. Students will acquire knowledge about different Antigen –Antibody technique 4. Students will able to analyse quantitative differential detection of IgM and IgG antibodies to Dengue virus
MICRO3609	HAEMATOLOGY AND IMMUNOLOGY	1. To enable students to choose a project topic of research 2. To apply the theoretical knowledge into practical project work

		3. It will help students to analyse and synthesise research findings 4. It will help students to craft an extensive and comprehensive piece of dissertation work with appropriate referencing and develop skills in other aspects of academic writing
STAT3501	Distribution Theory	1. Develop problem solving techniques needed to calculate probabilities. 2. Understand the most common continuous probability distributions and their real-life applications. 3. Understanding of distribution helps to understand the nature of data and to perform appropriate analysis. 4. The paper shall expose the students to different aspects of distribution theory. On studying this paper students can get to learn the theory underlying the construction of these distributions. 5. Thoroughly understanding the procedures of probability distributions students can apply these distributions to model random events. 6. On studying the theory of order statistics students can learn how to model product failure, droughts, floods and other extreme occurrences
STAT3502	Statistical Inference- I	1. Estimation, Parameter, statistic, standard error, sampling distribution of a statistic, 2. Characteristics of a good estimator 3. Different methods of estimation
STAT3503	Sampling Methods	1. Identify and recognize the appropriate sample survey design for related problems. 2. Understand the importance of sampling and how results from samples can be used to provide estimates of population characteristics such as the population mean, the population standard deviation and / or the population proportion. 3. Estimates the convenient sample size for Simple random sampling and stratified random sampling. 4. Have an appreciation of the practical issues arising in sampling studies.
STAT3504	Design of Experiments	1. Students will be able to understand basic principles and various terms of Design of Experiments. 2. Students will be able to apply Factorial design, confounding in real life problems. 3. Students should be able to analyze the data of various experimental design.
STAT3505	C- Programming	1. Student will be solved to problems using programming capability. 2. Student will be exploring their algorithmic approaches to problem solving. 3. Student will be developed modular programs using control structures, pointers, arrays, strings and functions.
STAT3506(A	Introduction to Stochastic Processes	1. Students will be able to formulate tpm, n-step transition probabilities 2. Students will be able to classify of states. 3. Students will become familiar with Poisson process.
STAT3506(B)	Biostatistics	1. Basic concept of clinical trials. 2. Identify epidemic events in real life situations. 3. Designs which typically used in clinical trials. 4. Application of appropriate design from clinical trials.
STAT3507	Statistics Practical- V	1. Students will be able to understand basic principles and various terms of Design of Experiments. 2. Students will be able to apply Factorial design, confounding in real life problems. 3. Students should be able to analyze the data of various experimental design.
STAT3508	Statistics Practical- VI	1. Student will be able to fit the distributions.

		2. Students will be able to draw model sample from distributions. 3. Students will be able to apply appropriate sample survey design for related problems. 4. Estimates the convenient sample size for Simple random sampling and stratified random sampling.
STAT3509	Statistics Practical- VII	1. Student will be solved to problems using programming capability. 2. Student will be exploring their algorithmic approaches to problem solving. 3. Student will be developed modular programs using control structures, pointers, arrays, strings and functions.
STAT3601	Introduction to Regression Analysis	1. Understand basic assumption and various terms of regression model. 2. Demonstrate simple linear regression as a tool for exploring the linear relationship between two variables 3. Learn how to estimate and interpret the model. 4. Use graphical and numerical methods to check the assumptions of regression model. 5. Learn about variable transformations and interactions to incorporate nonlinear relationships in the model. 6. Apply Simple Linear Regression model, Multiple Linear Regression Analysis, Logistic Regression Model in real life problems. 7. Determine tests of hypothesis of model parameters, AIC and BIC criteria.
STAT3602	Statistical Inference- II	1. Use hypothesis testing in real life situations. 2. Compute Type I Error, Type II Error and level of significance for a hypothesis test. 3. Apply Neyman-Pearson Theorem to find MP tests 4. Construct power functions in order to evaluate the hypothesis testing. 5. Learn various methods of non-parametric tests.
STAT3603	Statistical Quality Control and Reliability	1. Construct Control charts for attributes and variables. 2. Learn the various capability indices. 3. Understand the concept of sampling inspection plan. 4. Compute reliability of coherent system 5. Explain structural properties of coherent system
STAT3604	Operations Research	1. Formulate the given problem into LPP. 2. Understand the features of TP and AP. 3. Classify the solutions and interpret them according to the situations. 4. Differentiate between PERT and CPM network techniques. 5. Understand principles of zero-sum, two-person games.
STAT3605	Statistical Computing Using R-Software	1. Handle the data easily using R 2. Extensive statistical analysis by using R software. 3. Do an exploratory data analysis and statistical analysis in their project by using R software.
STAT3606(A)	Official Statistics	1. Familiarize themselves with institutional, legal and organizational bases, and principles of functioning of official statistics. 2. Understand the fundamentals of measurement in official statistics. 3. Study different methods of estimating national income. 4. Explain basic models of economic time series and different methods of estimation of trend and seasonal variation.
STAT3606(B)	Actuarial Statistics	1. Identify and analyze consequences of events involving risk and uncertainty. 2. Calculate survival function, curtate future lifetime, force of mortality.

		3. Calculate various payments from life tables using principle of equivalence, net premiums. 4. Construct life tables for different age groups of people.
STAT3607	Statistics Practical- VIII	1. Interpret the regression model and predict the response variable. 2. Determine critical path and floats associated with non- critical activities and events along with total project completion time. 3. Understand the importance of using PERT and CPM techniques for project management.
STAT3608	Statistics Practical- IX	1. Use hypothesis testing in real life situations. 2. To find Type I Error, Type II Error, power functions and level of significance for a hypothesis test, 3. Learn the concept various capability indices. 4. Learn the concept of coherent system reliability
STAT3609	Project	1. Student will able to solve real life situation by using statistical techniques. 2. Student will be exploring their algorithmic approaches to problem solving.
MAT3501	Metric Spaces	It will create a skill of understanding which spaces are homeomorphic. This subject will develop a platform for subjects like Topology and Manifolds in postgraduate mathematics.
MAT3502	Real Analysis I	• Describe fundamental properties of the real numbers that lead to the formal development of real analysis. • Determine the nature of an infinite sequence.
MAT3503	Problem Course based on MAT3501 &MAT3502	1. To be able to define and understand the basic concepts of concepts of sequences, series, functions, continuity, differentiability, and convergence. 2. To be able to apply the concepts of real analysis and metric spaces to solve practical problems. This includes problems from physics, engineering, and other areas of science. 3. To be able to use computer software to implement algorithms for solving problems in real analysis and metric spaces. This includes software for numerical analysis, graphing, and symbolic computation. 4. To be able to communicate effectively about real analysis and metric spaces. This includes being able to write clear and concise proofs, and being able to explain mathematical concepts to others.
MAT3504	Group Theory	Students determine possible subgroups of group. Be able to construct Caley table, identify normal subgroups and cyclic groups. Examine symmetry and permutation groups. Understand group concepts and solve problems individually.
MAT3505	Ordinary Differential Equation	Distinguish linear, nonlinear, partial and ordinary differential equations. Identify the appropriate method to solving non-homogenous differential equation. Understand ordinary, regular singular point and respective power series solution. Be familiar with the various formulas of solving linear differential equations using differential operator.
MAT3506	Problem Course based on MAT3504 &MAT3505	1. To be able to define and understand the basic concepts of group theory and ordinary differential equations. This includes the concepts of groups, subgroups, homomorphisms, isomorphisms, ordinary differential equations, and solutions of ordinary differential equations. 2. To be able to apply the concepts of group theory and ordinary differential equations to solve practical problems. This includes problems from physics, engineering, and other areas of science. 3. To be able to use computer software to implement algorithms for solving problems in group theory and ordinary

		differential equations. This includes software for numerical analysis, graphing, and symbolic computation. 4. To be able to communicate effectively about group theory and ordinary differential equations. This includes being able to write clear and concise proofs, and being able to explain mathematical concepts to others.
MAT3507	Operation Research	Model the decision making problems by using LP techniques.
MAT3508	Number Theory	Demonstrate knowledge and understanding of topics including, but not limited to divisibility, prime numbers, congruence, quadratic reciprocity, Diophantine equations. Learn methods and techniques used in number theory.
MAT3509	Practical based on MAT3507 &MAT3508	1. Define and understand the basic concepts of number theory and operations research. 2. Apply the concepts of number theory and operations research to solve practical problems. 3. Use computer software to implement algorithms for solving problems in number theory and operations research. 4. Communicate effectively about number theory and operations research.
MAT3601	Complex Analysis	Student will be able to find analyticity of functions, find integration of complex valued functions, use residue theorem to find real integrals
MAT3602	Real Analysis II	• Solve problems in a range of mathematical applications using the integral. • Examine various techniques of integration and apply them to definite and improper integrals. • Illustrate the effect of uniform convergence on the limit function with respect to continuity, differentiability and integrability.
MAT3603	Problem Course based on MAT3601 & MAT3602	1. To be able to define and understand the basic concepts of real analysis and complex analysis. This includes the concepts of sequences, series, functions, continuity, differentiability, and convergence. 2. To be able to apply the concepts of real analysis and complex analysis to solve practical problems. This includes problems from physics, engineering, and other areas of science. 3. To be able to use computer software to implement algorithms for solving problems in real analysis and complex analysis. This includes software for numerical analysis, graphing, and symbolic computation. 4. To be able to communicate effectively about real analysis and complex analysis. This includes being able to write clear and concise proofs, and being able to explain mathematical concepts to others.
MAT3604	Ring Theory	Student will be able to check the irreducibility of higher degree polynomials over rings. Understand the concepts like ideals and quotient rings. Understand the concept of ring homomorphism. Apply Eisenstein's criterion for irreducibility of a polynomial
MAT3605	Partial Differential Equation	Student will be able to classify the partial differential equations. Identify methods and implement on solving Pfaffian differential equations.
MAT3606	Problem Course based on MAT3604 & MAT3605	1. Define and understand the basic concepts of ring theory and partial differential equations. 2. Apply the concepts of ring theory and partial differential equations to solve practical problems. 3. Use computer software to implement algorithms for solving problems in ring theory and partial differential equations. 4. Communicate effectively about ring theory and partial differential equations.
MAT3607	Optimization Techniques	• Develop mathematical models associated with network flows and related real life applications.

		• Should find Nash equilibrium in mixed strategies in games 2x2 and 2xN. • Knows Lagrange multipliers methods for solving problems on finding extremum.
MAT3608	Lebesgue Integration	Students will be able to calculate Lebesgue integration and understand their properties and relation with Reimann integration. This course will be useful for probability theory.
MAT3609	Practical based on MAT3607 & MAT3608	1. To be able to define and understand the basic concepts of Lebesgue integration and optimization techniques. This includes the concepts of Lebesgue integrals, measurable functions, convergence of sequences of functions, and optimization problems. 2 . To be able to apply the concepts of Lebesgue integration and optimization techniques to solve practical problems. This includes problems from physics, engineering, and other areas of science. 3 . To be able to use computer software to implement algorithms for solving problems in Lebesgue integration and optimization techniques. This includes software for numerical analysis, graphing, and symbolic computation. 4. To be able to communicate effectively about Lebesgue integration and optimization techniques. This includes being able to write clear and concise proofs, and being able to explain mathematical concepts to others.
MAT3610	Project	1.To be able to apply the knowledge and skills learned in mathematics courses to solve real-world problems. This includes the ability to identify, analyze, and solve mathematical problems that arise in other disciplines, such as physics, engineering, and economics. 2. To be able to work independently and as part of a team to complete a mathematical project. This includes the ability to plan, organize, and execute a project, as well as the ability to communicate effectively with others about the project. 3. To be able to use computer software to solve mathematical problems. This includes the ability to use software for numerical analysis, graphing, and symbolic computation. 4. To be able to communicate effectively about mathematics. This includes the ability to write clear and concise reports and presentations about mathematical projects.
ELE3501	Advanced Digital System Design using Verilog	1. The main outcome of this course is to acquaint students with different programmable devices, designing of digital circuits and VERILOG language.
ELE3502	8051 Microcontroller	1. The course is helpful to the students in understanding various instruction sets development tools. 2. Will be able to enhance the knowledge of assembly language programming and interfacing different I/O devices.
ELE3503	Analog Circuit Design and Applications of Linear ICs	1. Knowing important concepts like filters, amplifiers and rectifiers and will be able to design and analyse the various analog circuits. 2. Also understanding special purpose ICs used in multivibrators, function generators and regulators
ELE3504	Principles of Semiconductor Devices	1. The course is helpful to the students in understanding crystal structure and characteristics of semiconductor devices such as BJT and FET. 2. Knowing the important concepts such as Fermi level, breakdown mechanism and equilibrium conditions.
ELE3505	Fundamentals of ‘C’ Programming	1. Concepts of character set , I/O functions , loops and derived data types which are helpful in designing and developing C programs. 2. Will be able to develop basic C graphics programs by knowing the concepts as initialization, graphics commands

		etc.
ELE3506	Optical Fiber Communication	1. Understanding concepts of fiber optics, its types, different optical sources and detectors. 2. Will be able to knowing concepts attenuation and losses in fiber used in optical communication.
ELE3507	Practical Course I	CO1: Analyze different design and test procedures for analog circuits and systems. CO2: Measure different parameters of optical fiber communication systems CO3: Understand importance of product design and entrepreneurship. CO4: Develop electronic systems for given application.
ELE3508	Practical Course II	CO1: Develop and simulate design digital systems using Verilog. CO2: Design and develop AVR microcontroller based systems. CO3: Understand different nanoelectronic devices. CO4: inculcate basic skills required for design and development of embedded Systems.
ELE3509	Practical Course III (Project)	NO OUT COMES
CSCO3501	System Programming &Operating System	After the completion of this course student to should understand the basic structure of Operating System
CSCO 3502	Theoretical Computer Science	Knowledge of automata, formal language theory and computability
CSCO3503	Computer Networks - I	Equip with knowledge and learn the skills necessary to support for their Career in Network Security
CSCO3504	Web Development – I	On completion of the course, student will be able to understand how to develop dynamic and interactive web pages
CSCO3505	Advanced Programming in Java	After the completion of this course student is capable to develop standalone computer application as well as web-based application.
CSCO3506	Object Oriented Software Engineering	Understanding Object Orientation in Software engineering concepts and importance • Understand the Unified Modeling Language concepts, importance and its components • Understand Structural, Behavioral, Dynamic modeling techniques and diagrams. • Understand Object Oriented analysis, design, testing concepts and its techniques
CSCO3507	Lab Course I: Based on CSCO3501	1. Student will able to understand implementation of assembler 2. Student will able to understand implementation of Scheduling and Banker Algorithm
CSCO3508	Lab Course II: Based on CSCO3505	Student will able to understand implementation of Operating System Concept
CSCO3509	Lab Course III: Based on CSCO3504	On completion of the course, student will be able to understand how to develop dynamic and interactive web pages.
CSCO3601	Advanced Operating System	After the completion of this course student to should understand the basic structure of Operating System
CSCO3602	Compiler Construction	Understand the various phases of a compiler and to develop skills in designing a compiler.
CSCO3603	Computer Networks - II	Learn the security concepts and techniques.

CSCO3604	Web Development–II	On completion of the course, student will be able to build dynamic website
CSCO3605	Advanced Java Technologies – Frameworks	After the completion of this course student should understand Java Frameworks and capable to develop Web Development
CSCO3606	Software Metrics & Project Management	• Understand the activities during the project scheduling of any software application. • Learn the risk management activities and the resource allocation for the projects. • Can apply the software estimation and recent quality standards for evaluation of the • Software projects Acquire knowledge and skills needed for the construction of highly reliable software project • Able to create reliable, replicable cost estimation that links to the requirements of project planning and managing.
CSCO3607	Lab Course I: Based on CSCO3601	1. Student will able to understand implement JAVA front end 2. Student will able to understand implementation of Advanced JAVA concepts
CSCO3608	Lab Course II: Based on CSCO3605 & Mini Project using JAVA	Student will able to understand implementation of JAVA Framework
CSCO3609	Lab Course III: Based on CSCO3604 & Mini Project using PHP	On completion of the course, student will be able to build dynamic website.
EVS 3501	Ecosystem Management	1) Students understood terrestrial ecosystem and its resources. 2) Students understood aquatic ecosystem and their importance.
EVS 3502	Wildlife Biology	1) Students get information about wildlife and their various species. 2) Students understanding diversity of wildlife and their scope.
EVS 3503	Geoscience	1) Students understood origin of earth and soil weathering process. 2) Students understood natural hazards and disaster.
EVS 3504	Nature Conservation	1) Students aware about nature conservation methods and their international efforts. 2) Students understood objectives and challenges of nature conservation.
EVS 3505	Environmental Governance, Laws and Ethics	1) Students understood the Acts and laws related to Environment protection. 2) Students aware about the fundamental duties and rights and also environmental ethics.
EVS 3506	Environmental Biotechnology	1) Students understood composting, vermicomposting and biofuel. 2) Students understanding biotechnology and its used to control the environmental pollution
EVS 3507	Practical based on EVS3501 and EVS3502	1 It will help to conserve the wildlife biology. 2 Students will get job in GIS mapping and remote sensing. 3 Data analyzer will be expert to conclude the significance of biological experiments.
EVS 3508	Practical based on EVS3503 and EVS3504	1 It will help to conserve the wildlife biology. 2 Students will get job in GIS mapping and remote sensing. 3 Data analyzer will be expert to conclude the significance of biological experiments.
EVS 3509	Practical based on EVS3505 and EVS3506	1 It will help to conserve the wildlife biology. 2 Students will get job in GIS mapping and remote sensing. 3 Data analyzer will be expert to conclude the significance of biological experiments.

EVS 3601	Climate Change	1) Sensitize about Impacts of climate change and future goals and of sustainability 2) Aware of various policies and agreements regarding these two aspects 3) Understand Methodologies for impact assessments and current practices of the societies. 4) Help us understand why global temperatures continue to rise, how the climate affects us, and how we can tackle this challenge before things get much worse. 5) Students will be able to define climate change. 6) Students will be able to analyze the global impact of climate change. 7) Students will be able to outline the process of climate change.
EVS 3602	Analytical Methods	1) Students understood the analytical methods. 2) Students understood the instrument handling technique. 3) Students will understand the physiological functions that regulate the proper growth and development of living things. 4) Express the role of analytical chemistry in science. 5) Express the qualitative analysis methods.
EVS 3603	Sustainable Development	1) Students understood origin of earth and soil weathering process. 2) Students understood natural hazards and disaster. 3) Students will understand state of society in which living condition and resources are use to meet human needs without jeopardizing the integrity and stability of natural system, ensuring a safer future for future generation. 4) Students will be able to define sustainability and identify major sustainability challenges. 5) Students will be able to use systems thinking for research and for practical problem solving. 6) Interdisciplinary collaboration and integration.
EVS 3604	Environmental Statistics	1) To find the probabilities of various events. 2) Compute various measures of central tendency, dispersion, moments, skewness and kurtosis. 3) Compute correlation coefficient, regression coefficients and to interpret the results. 4) Compute the correlation coefficient for bivariate data and interpret it. 5) To fit linear, parabolic and exponential curves to the bivariate data to investigate relation between two variables. 6) It helps to students to environmental problems in terms of mathematical modeling to

		understand the impact of the chosen variables under study and show the direction of change in positive or negative manner 7) Allowing researchers to gain an understanding of environmental issues through researching and developing potential solutions to the issues they study.
EVS 3605	Environmental Risk and Assessment Management	1) Student understood fire and chemical safety. 2) Student understood hazard identification and their management. 3) Students will aware about to identify risk at an early stage and take the necessary steps to measures to mitigate its harmful effects. 4) Mitigation and management techniques for hazard. 5) Emerging first aid at hazard site.
EVS 3606	Environmental Economics And Audit	1) Students understood dimensions of natural Resources. 2) Students understanding the term Environmental Audit. 3) Students will acquire knowledge about to achieve rural development through the allocation and management of resources, mediated by develops mentalist configuration and local communities. 4) Have a detailed understanding of the disciplines of environmental economics including its key principles and methods. 5) Be able to use economic techniques to analyze environmental problems and to assess environmental policies.
EVS 3607	Practical based on EVS 3601 to EVS 3603	1) Students understood handling of instruments. 2) Students understanding the basics for industrial purpose. 3) Student understanding the sustainable farming practices. 4) Students will reduce their reliance on non renewable energy, reduce chemical use and save scarce resources. 5) Students will aware to reduce pollution and waste reduction measures like reuse and recycling
EVS 3608	Practical based on EVS 3604 to EVS 3606	1) Students understood the term Environmental Audit. 2) Student understood proper safety practices in chemical lab. 3) Student understood environment friendly concepts. 4) Students will understand how safety system works and risk management. 5) Emerging first aid at hazard site.
EVS 3609	Project	1) Information acquired about research work.

		2) Getting of awareness of innovative methodology. 3) Significant conclusions and outputs. Students will experience about innovative methodology to solve environmental problems

Course Outcome – M.A.

Name of Course	Paper Code	Paper Name	Outcome
English	ENG 4101 ENG 4201	English Literature from 1550-1798	• The students get familiar with the major movements and figures of English Literature. • The students develop the literary sensibility and emotional response to the literary texts. And they learn to appreciate the literary texts. • The students are exposed to the artistic and innovative use of language and they try to write the creative language. • The values and human concern is instilled in students through exposure to literary texts. • The students become competent in literary and linguistic skills.
English	ENG 5101 ENG 5201	Indian Writing in English (Core Paper)	• Students get acquainted with the major movements and figures of Indian Literature in English • The syllabus creates literary sensibility among the students • The students get exposure to the artistic and innovative use of language of writers • Literary texts instill and develop human concern in students • Literary and linguistic competence are enhanced among students
English	ENG 5102 ENG 5202	English Language and Literature Teaching	• The students become aware in both the artistry and utility of the English language through the study of literature and basic language skills • The students become conscious in the development of intellectual flexibility and creativity through language and literature teaching • The students become competent in literary and linguistic skills.
English	ENG 5302 ENG 5402	English Language and Literature Teaching	• The students become aware in both the artistry and utility of the English language through the study of literature and basic language skills • The students become conscious in the development of intellectual flexibility and creativity through language and literature teaching • The students become competent in literary and linguistic skills.
English	ENG 5303 ENG 5403	Drama in English	• It enables students to analyses literature and drama by using appropriate theoretical, historical and cultural apparatus. • Students get to know about various cultures through literature. • It helps students to explore the creative use of language and the entire range of human experiences through dramas.

			• They learn the dramatic structure, dramatic devices and analyze its effect on the readers.
English	ENG 5301 ENG 5401	Indian Writing in English	• Students get acquainted with the major movements and figures of Indian Literature in English • The syllabus creates literary sensibility among the students • The students get exposure to the artistic and innovative use of language of writers • Literary texts instill and develop human concern in students • Literary and linguistic competence enhanced among students
English	ENG 5304 ENG 5404	American Literature	• Students learn major literary movements, literary works and writers in America. • The literary sensibilities for American literature of the students are enhanced
Economics	ECO-101	Micro Economics I	• The main outcome of this course is acquaint students with various aspects of consumer behaviour and demand analysis, production theory and behaviour of costs, the theory of traditional markets
Economics	ECO-102	Public Finance I	• The main outcome of this course is apprising students with various concepts of public revenue and expenditure of the government with theoretical base and its current application.
Economics	ECO 103	International Economics I	• The main outcome of this course is to familiarize classical and modern theories of international trade.
Economics	ECO 104	Indian Economic Policy	• The main outcome of the syllabus would be the understanding of undercurrents behind the policy making and its implementation.
Economics	ECO-201	Micro Economics II	• The main outcome of this course is acquaint students with various types of markets, characteristics, equilibrium of firm and industry and distribution theories.
Economics	ECO 202	Public Finance II	• The main outcome of this course is apprising students with constitutional approach of Indian fiscal federalism and current Indian taxation policies.
Economics	ECO-203	International Economics II	• The main outcome of this course is to update student about international transactions or to elaborate the status of exchange market.
Economics	ECO-204	Introduction To Quantitative Methods	• The main outcome of the syllabus would be the development of expertise in use of basic statistical and mathematical tools required for academic and research purpose in social sciences
Economics	ECO5301	Macro Economics Ii	• The main outcome of this course is apprising students with variousconcepts of Macro economics with theoretical base and its current application
Economics	ECO5302	Economics of Growth and Development –I	• Students will be able to understand various terms and key concepts related to Economic growth.

			• Student will be able to understand the changes and continuity in phases of economic growth and development. • Students learn the problems and prospects of economic growth and development.
Economics	ECO5303	Agribusiness Economics – I	• The main outcome of this course is acquainting students with various aspects of data collection, data analysis, data processing, report writing etc.
Economics	ECO5304	Research Methodology	• The main outcome of this course is acquaint students with various aspects of data collection, data analysis, data processing, report writing etc.
Economics	ECO5401	MACRO ECONOMICS II	• The main outcome of this course is apprising students with variousconcepts of Macro economics with theoretical base and its current application.
Economics	ECO5402	Economics of Growth and Development –II	• The Course will equip students with the theoretical ideas behind Economic Growth • The course will provide the understanding of the empirical models of Growth • At the end the students would be able to understand the role of various factors in economic development and suggest measures to enhance it with appropriate measures.
Economics	ECO5403	Agribusiness Economics – II	• The main outcome of this course is acquaint students with various aspects of data collection, data analysis, data processing, report writing etc.
Economics	ECO5404	MODERN BANKING	• The main outcome of this course is acquaint students with various aspects of financial system, role ,structure, performance and the current problems faced by the banking sector in India
Geography	GG211	Fundamentals of Geomorphology	• The students pursuing this course would have to develop in depth understanding of various aspects of the subject. The working principles, design guidelines and experimental skills associated with different fields of Geography such as Geomorphology, Climatology, Economic Geography, Population Geography, Settlement Geography, Remote Sensing and GIS (Geoinformatics), etc.
Geography	GG212	Fundamentals of Climatology	• Students will well aware about basic concepts and principles of climatology. • Students understand global pressure belts and planetary wind systems of the earth. • Students will acquire knowledge of evolution, structure and composition of atmosphere. • Students will understand concepts related to insolation. • Students obtain knowledge about climatic elements
Geography	GG113	Fundamentals of Economic Geography	• Students are able to demonstrate an understanding of the asset, cost, benefit, analysis, tax, policy, impacts and other economic aspects.

			• Students understand the demand of population and availability of raw material. • Students are aware about the labour tape, cost, importance and role also in industrial zone. • Students will understand the value of land it proper use. • Students well aware about factors affecting on transport and role of transport in economy of the nation.
Geography	GG114	Fundamentals of Population and Settlement Geography	• Students are well aware about basic principles and concepts in population and settlement geography. • Students know the approaches and various theories in population and settlement geography. • Students understood the dynamics of population and its role in population policies. • Concepts of settlement patterns and types are well understood by students. • Students are able to apply knowledge of population and settlement geography in developmental planning.
Geography	GG115	Practicals in Physical Geography	• Students will able to prepare drainage network map using methods of stream ordering. • Students are draw and use the various drainage basin analysis methods. • Students can classify climate according to Koppen and Thornthwait methods. • Students will able to draw climatic element's diagrams. • Students will aware about basic elements of physical geography.
Geography	GG116	Practicals in Human Geography	• Students are able to calculate crop combination and diversification methods. • Students are able to analyse the population data by using computers. • Students enable to plot age sex structure, different type of birth and death rates.
Geography	GEO 5301	Tropical Geomorphology	• Students can able to identify different physical features available in nature. • Students can understand different types of soils. Its formation and degradation processes. • Students will well aware about peculiarities and classification of tropical environment. • Students will well aware about tropical weathering • Students will understand about tropical landscape. • Students will get knowledge of tropical planation. • Students will well aware about landform development in tropics.

Geography	GEO 5302	Practical in Geomorphology	• Students able to identify cross section, river basins and different type of analysis like sediments, textural etc. • Students will able to draw longitudinal profile of river. • Students will able to calculate runoff, sediment and sediment yield of channel. • Students will able to calculate hydraulic geometry equations. • Students will able to measure channel cross-section on field. • Students will able to calculate velocity and discharge using Manning equation.
Geography	GEO 5303	Urban Geography	• Students will know migration status in urban sector. • Students will acquaint the difference between rural and urban sector. • Students will familiarize with the classification of Towns and Cities. • Students will understand the demographical structure of cities in India and world. • Students will know urban development policies in India.
Geography	GEO 5304	Practical in Population and Settlement Geography	• Students able to identify age-sex pyramid • Students prepare questionnaires and able to conduct survey of village and urban area. • Students can able to identify types and pattern of rural settlements. • Students can able to identify morphological development of city, hierarchy of settlements and different pattern and function of the cities.
Geography	GEO 5305	Geoinfoematics II	• Students will understand fundamental concepts of remote sensing. • Students will understand types of remote sensing, their sensors and resolution. • Students will well aware about aerial photography. • Students will understand various techniques of image interpretation.
Geography	GEO 5306	Geographical Thoughts	• Students will understand historical development of Geographical Thoughts. • Students will well aware about dualism in geography. • Students will understand recent trends in Geography. • Students will acquire knowledge about theories and laws of Geography. • Students will understand to use of geographical knowledge in urban and regional land use planning. • Students will understand paradigms in geography.
Geography	GEO5307	Practical in Geoinformatics	• Students will able to measure and interpret aerial photographs. • Students will understand techniques of visual image interpretation. • Students will able to generate spatial data. • Students will understand various methods of GIS operations.

Geography	GEO 5308	Watershed Management	• Students will well aware about concept and principles of watershed and watershed management. • Students will well aware bout characteristics of Watershed. • Students will understand processes in watershed. • Students will well aware about water and soil conservation techniques. • Students will understand necessity and problems in watershed management.
History	HIS 4101	History and its Theory	• Students will get acquainted with early theories of Histography. • Students will acquire knowledge about modern and most recent theories of history writing. • Students will understand the definition and nature of history. • With respect to other social Sciences, students will have an interdisciplinary approach towards history.
History	HIS 4102	Evolution of Ideas and Institutions in Ancient India	• Students will be able to analyze perceptions, limitations and range of sources of Ancient India. • Students will be able to explain political and social Ideas and Institutions of Ancient India. • Students will be able to illustrate emergence of caste-based society in India. • Students will be able to explain emergence of states in Ancient India.
History	HIS 4103	Maratha Polity	• Students will be able to analyze administrative system of Marathas. • Students will be able to explain nature of Maratha polity. • Students will be able to identify strengths and weaknesses of Maratha administrative system. • Students will be able to review socio-Political power structure of Maratha period.
History	HIS 4104	Social Background of Dalit Movement in Maharashtra	• Students will acquire knowledge of various terms and concepts related to Indian society and caste system. • Students will be able to understand the changes in and continuity of Indian Society. • They will discuss the contemporary social issues in classroom and its relation to the social history. • They will take interest in reading various books related to Dalit Movements in Maharashtra.
History	HIS 4201	History and its Practice	• Students will understand history and its forces. • Students will understand and interrogate paradigms of History.

			• Students will acquire knowledge about research in terms of formulating hypothesis.
History	HIS 4202	Evolution of Ideas and Institutions in Medieval India	• Students will be able to analyse perceptions, limitations and range of sources of Medieval India. • Students will be able to explain political and Social Ideas of Institution in Medieval India. • Students will be able to illustrate emergence of caste-based societies in Medieval India. • Students will be able to explain emergence of states in Medieval India.
History	HIS 4203	Socio-Economic History of the Marathas	• Students will understand the components of social structure and their functions. • Students will understand their relationship between religion, caste customs, traditions in 17th and 18th Century Maratha society. • 3) Students will be able to explain aspects of economic and social life of Marathas.
History	HIS 4204	Nature of Dalit Movement in Maharashtra	• Students will be able to understand the changing position of Dalit and Social transformation at a conceptual and practical level. • Students will acquire knowledge that lays emphasis on contribution of Dr. Ambedkar in the Dalit Movement. • Students will acquire knowledge of Constitutional rights of weaker sections. • Students will take interest in Dalit literature. • Students will understand Dalit Consciousness that adds new dimensions in understanding 'Dalit'.
History	HIS 5301	Ancient and Medieval Civilizations of the World	• Students will be able to identify and define the world's earliest civilization, and describe how it shaped the development of these early civilization. • Identify and describe the emergence of new philosophies. • Identify and analyze key facets of medieval society in western Europe –the Catholic Church, feudalism ,and the rise of technology and commerce. • Analyze and describe the rise of Islam in the Middle East
History	HIS 5302	Debates in Indian History	• Students can achieve knowledge about development of Indian feudalism and evolution of the political structures of early-medieval India. • This paper will make students understand in detail the analytical thinking in process of reconstruction of history. • Students will also get exposure to difference in perspective and understanding of European and Indian historians /scholars.

History	HIS 5303	Economic History of Modern India	• Students will be able to understand various terms and key concepts related to Economic History of India. • Student will be able to understand the changes and continuity in Indian Economic system from Ancient to colonial period. • They will take interest to read various books related to British policy and ideology in ruling India. • They will understand that economy is a very important factor in continued historical processes.
History	HIS 5304	Maharashtra in the 19th Century	• Learn the history of modern Maharashtra from an analytical perspective. • Understand the dialectical relationship between continuity and change in Maharashtra. • Get knowledge of the ideas, institutions, forces and movements that contributed to the structural changes in Maharashtra. • Get introduced to regional history within a broad national framework.
History	HIS5401	History of Modern India (1857-1971)	• Understand the history of modern India from an analytical perspective. • Get acquainted with the various caste, class and gender-related movements. • Introduced to the various all-inclusive movements which helped India to gain independence. • Know about progression of India in the post-independence.
History	HIS5402	Intellectual History of the Modern West	• Understand the concepts that are used in history, both in west Europe and India. • Get acquainted with the role played by the intellectual activities in transition from medieval to modern times.
History	HIS5403	World after World War II (1945-2000)	• Get acquainted with the post-World War II global condition. • Understand contemporary world from the historical perspective.
History	HIS 5404	History of Maharashtra in the 20th Century	• Understand the history of modern Maharashtra with an analytical perspective. • Get acknowledged with the regional history within a broad national framework.
Political Science	POL- 4101	Political Theory	• The Course projects the global and interdisciplinary orientation of Political Theory. It also emphasizes the interplay of theory and practice in the political process.
Political Science	POL- 4102	Public Administration	• 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 Science	POL- 4103	Political Institutions in India	• 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
Political Science	POL- 4104	Modern Political Ideologies	• To Know the core doctrines of each of the ideologies and to make sense of politics through different ideological perspectives
Political Science	POL- 4201	Public Policy	• It attempts to help students understand and analyze policy making in practical context.
Political Science	POL- 4202	Issues in World Politics	• The major issues of the twenty first century- security, economics and transnational issues are presented and analyzed.
Political Science	POL- 4203	Comparative Politics	• To Know the dynamics of domestic politics across the countries.
Political Science	POL- 4204	Political Process in Maharashtra	• The course seeks to sensitize students to the changes in the political process over the period of over half a century from Congress domination to a bipolar competition and from Maratha hegemony to the crisis of hegemony
Political Science	POL- 5301	Political Thinking In Modern India	• 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 Science	POL- 5302	Political Sociology	• Students are also expected to understand different forms of justifications of power and the role of ideology in this regard. 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
Political Science	POL- 5303	Theory of International Relations	• Theories provide interpretative frameworks for understanding what is happening in the world and the levels of analysis. Competing theories are presented.
Political Science	POL- 5304	Indian Administration	• 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.
Political Science	POL- 5401	Traditions of Political Thought	• 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 Science	POL- 5402	Political Process in India	• 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 Science	POL- 5403	Political Participation	• 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

Political Science	POL- 5404	Party System in India	• The course will also acquaint students with analytical perspectives on party politics in India.
Marathi	MAR5303 MAR5403	विशेष लेखकाचा अभ्यास : मध्ययुगीन विशेष लेखकाचा अभ्यास : मध्ययुगीन	• एखादा लेखक कसा घडतो, तो क्रम विद्यार्थ्यांला समजावून घेता येईल. तसेच लेखकाचा लेखन प्रवास जाणून घेतल्यामुळे विद्यार्थ्यांना वाड़मय निर्मितीची आणि आस्वादाची प्रेरणा मिळेल
Marathi	MAR4101 MAR4201	व्यावहारिक आणि उपयोजित मराठी भाग – १ व्यावहारिक आणि उपयोजित मराठी भाग – २	• विद्यार्थ्यांना व्यवहारामध्ये भाषेची विविध उपयोजित कौशल्ये आत्मसात करण्याची क्षमता विकसित करणे • विद्यार्थ्यांना व्यवहारातील भोच्या विविध माध्यमांमधील संधी व त्यासाठीची तंत्रकौशल्ये अवगत करण्याची क्षमता विकसित करणे
Marathi	MAR4102	मध्ययुगीन मराठी वाङ्मयाचा इतिहास (प्रारंभ ते १६००)	• विद्यार्थ्यांना मराठी भाषेची उत्पत्ती, विकास व स्थित्यंतराची ओळख होद्वन मराठी भाषेचे ऐतिहासिक महत्त्व लक्षात येईल. त्यामुळे सद्यकालात मराठी भाषेच्या जतन व संवर्धनाच्या दृष्टीने महत्त्वपूर्ण भूमिका घेता येईल.
Marathi	MAR4202	मध्ययुगीन मराठी वाङ्मयाचा इतिहास (१६०० ते १८१८)	• विद्यार्थ्यांना मराठी भाषेचे वैविध्य लक्षात येईल. तसेच भाषेचे इतिहातील स्थान व महत्त्व लक्षात येईल. विविध ग्रंथाच्या आधारे भाषेचे स्वरूप लक्षात येईल त्यामुळे मराठी भाषेच्या प्रचार व प्रसारार्थ महत्त्वपूर्ण भूमिका घेता येईल
Marathi	MAR4103	भाषाविज्ञान: वर्णनात्मक	• विद्यार्थ्यांना शास्त्रीय दृष्टीने आदेशात्मक भाषेचा परिचय होईल.
Marathi	MAR4203	भाषाविज्ञान: सामाजिक	• समाज रचने नुसार भाषेतील विविध स्तर विद्यार्थ्यांच्या लक्षात येतील.
Marathi	MAR4104	ग्रामीण साहित्य	• विद्यार्थ्यांना ग्रामीण रूढी, परंपरा, संस्कृती तसेच शेती आणि शेतीच्या प्रश्नांची जाणीव होऊन ते सोडविण्याचा तयार होईल आणि एक सक्षम समाज निर्मितीस योगदान होईल.
Marathi	MAR4204	दलित साहित्य	• विद्यार्थ्यांना दलितांच्या रूढी, परंपरा, संस्कृती आणि प्रश्नाची जाणीव होउन ते सोडविण्यास तयार होईल आणि एक सक्षम समाज व राष्ट्रनिर्मितीस योगदान होईल.

Course Outcome – M.Com

Name of Course	Paper Code	Paper Name	Outcome
Commerce	COMMA4101	Management Accounting	• This will help the students to get in-depth knowledge about Management Accounting and its importance. It would also enable the students to know about Financial Statement Analysis, Utility of Cash flow Analysis and Uses of fund flow statement. • It would also be able to know about working capital management and its components.
Commerce	COMSM4102	Strategic Management	• The course will help the students to get a thorough knowledge about strategic management. • It would also enable the students to know about strategy formulation, analysis, planning, choices, implementation and blue ocean strategy.
Commerce	COMAA4103	Advanced Accounting	• The course will help the students to get deep knowledge about basic accounting concepts which are universally accepted. He also aware about the accounting standards used in India. • He is able to prepare consolidated financial accounts of holding company and know about the accounting system of various branches. Students would also aware about the new trends in accounting and branches of accounting.
Commerce	COMIT4104	Income Tax	• This will help the students to get knowledge about Income Tax Act. It would also enable the students to know about computation of taxable income from Salary, House Property, Business income, Capital Gain etc. and Tax Liability. • He also gets aware regarding provisions of residential status and incident of tax.
Commerce	COMFAC4201	Financial Analysis and Control	• This will help the students to enable students to acquire sound knowledge of Concepts, methods and techniques of management accounting and to make the students develop Competence with their usage in managerial decision making and control. It would also be able to prepare various budgets.
Commerce	COMIE4202	Industrial Economics	• The course will be able to apply economic theories and methodologies in Industrial Location issues in various determinants of the size and structure of industries.
Commerce	COMSAA4203	Specialized Area in Accounting	• The course will help the students to get knowledge about International Financial Reporting Standards. It would be aware about the accounting treatments for corporate restructuring. • The student is able to prepare contract accounts of construction business and know about the accounting for taxation system.

Commerce	COMBTAP4204	Business Tax Assessment and Planning	• This course will help the students to get knowledge about assessment of income of different business organisations. It would also enable the students to know about computation of advanced payment of tax, TDS/TCS etc. and know about procedure of filing return of income. • It would also enable the students about various provisions regarding appeal and penalties, offences, audit under The Act.
Commerce	COMBF5301	Business Finance.	• This will help the students to get in-depth knowledge about Capital Markets and Financial services. • Students will understand the characteristics of different financial assets such as money market instruments, bonds, and stocks and how to buy and sell these assets in Capital Markets.
Commerce	COMRMB5302	Research Methodology for Business	• The course offers to the under graduate students to learn about the various applications of research methodology, role of research methodology in the business. • It may further help the students for pursuing to qualifying exams like PET, etc. As research is a part of the curriculum of the courses
Commerce	COMAA5303	ADVANCED AUDITING	• This course will enable students about audit process and procedure to be conducted in corporate sector. Course will also make them able to find out the frauds and errors which may occur in various types of companies. • It will also helpful to understand the use of computers in audit process
Commerce	COMSAA5304	SPECIALIZED AREAS IN AUDITING	• This course will enable students about audit process and procedure to be conducted in various entities such as banks, co-operative societies, special units and Govt. organizations. • Course will also make able to find out the frauds and errors which may occur in the organizations.
Commerce	COMCMFS 5401	Capital Market & Financial Services	• This will help the students to get in-depth knowledge about Capital Markets and Financial services. • Students will understand the characteristics of different financial assets such as money market instruments, bonds, stocks and how to buy and sell these assets in Capital Markets
Commerce	COMIEE5402	Industrial Economic Environment	• This course will understand the basic concepts of Industrial Finance. It will develop awareness regarding various industrial and environmental issues in India. • It will provide special knowledge of industrial growth and industrial policies in India.

			The students can understand the impact of labour reforms on Industries.
Commerce	COMRAATA5403	Recent Advances In Accounting, Taxation & Auditing	• This course will enable students about recent trends in accounting, auditing and taxation field. Course will also make them able to find out the frauds and errors which may occur in various sectors. • It will also helpful to understand accounting and audit procedure for corporate affairs. This course also helpful to keep up-date the students and to develop their ability to observe latest business affairs
Commerce	COMPW5404	PROJECT WORK	• This will enable students to develop research attitude among them. It will also helpful to understand and enrich the ability of research work. • This is a practical exposure to familiarize the students with the application of research methodology and inculcate the habit of referring to various research publications like articles, journals, reference books etc

Course Outcome – M.Sc.

Name of Course	Paper Code	Paper Name	Outcome
Botany	BOT4101	Plant Systematics I	• Expert in cryptogams useful to save Cryptogamic diversity.
Botany	BOT4102	Cell Biology	• The main outcome of this course is to acquaint students with some cytological techniques.
Botany	BOT4103	Genetics and plant Breeding	• Knowledge of this paper helps to the student in initial description of the data of chromosomal structural and numerical alterations and breeding techniques in plants.
Botany	BOT4104	Advanced Botanical techniques	• Enrich student knowledge with advance botanical techniques
Botany	BOT 4105	Practicals based on BOT. 4101 & 4102	• The main outcome of this course is to developed skilled cryptogamist and cell biologist
Botany	BOT4106	Prac. based on BOT. 4103 & 4104	• The learning outcome of this training useful to develop new methods in plant breeding
Botany	BOT 4201	Plant Systematics – II	• Students will acquire knowledge of plants life cycle of plants
Botany	BOT 4202	Plant Physiology and Biochemistry	• Development of expertise in plant physiology and biochemistry.
Botany	BOT 4203	Mol.Biol. & Genetic	• Experts required in future for genetic library of plants

		Engineering	
Botany	BOT 4204	Plant Ecology and Biodiversity	• Appreciate the ethical, cross-cultural and historical context of environmental issues and the links between human and natural systems.
Botany	BOT 4205	Practicals based on BOT 4201and BOT 4202	• Appreciate the ethical, cross-cultural and historical context of environmental issues and the links between human and natural systems.
Botany	BOT 4206	Practicals based on BOT 4203 and BOT 4204	• Skilled molecular biologist and ecologists can help to solve the critical problems related with plant diseases and improvement of characteristics of plants.
Botany	BOT 5301	Angiosperms and Evolution	• Expert in angiosperms to conserve angiosperm diversity.
Botany	BOT 5302	Developmental Botany	• The main outcome of this course is to acquaint students with some anatomical techniques.
Botany	BOT5303	Computational Botany	• Development of student's expertise in biostatistics, bioinformatics and biomathematics
Botany	BOT 5304 (A)	Advanced Plant Physiology	• Enrich student knowledge with advanced plant physiology
Botany	BOT 5304 (B)	Advanced Mycology and Plant Pathology	• The main outcome of this course is to develop skilled mycologists and plant pathologist
Botany	BOT 5304 (C)	Bryology	• Students will get detail knowledge of bryophytes from different localities.
Botany	BOT 5304 (D)	Angiosperm Taxonomy	• The main outcome of this course is to develop skilled taxonomist.
Botany	BOT 5305	Practical's Based on BOT 5301, 5302, 5303	• The learning outcome of this training useful to develop new methods in plant taxonomy and Embryology, Bioinformatics
Botany	BOT 5306 (B)	Practical's based on Advanced Mycology and Plant Pathology	• Knowledge of the fungal pathogens should helpful to management of plant diseases.
Botany	BOT 5306 (C)	Practical's based on Bryology	• Knowledge of the Bryophytes and their association.
Botany	BOT 5306 (D)	Practical's based on Angiosperm Taxonomy	• Knowledge of the Angiosperm taxonomy
Botany	BOT 5401	Plant Pathology	• Development of expertise in disease development and disease management in plants
Botany	BOT5402	Industrial Botany	• Experts required in future for use of plant at commercial level.
Botany	BOT5403	Plant Biotechnology	• Appreciate the ethical, cross-cultural and historical context of environmental issues and the links between biotechnology and human needs.

Botany	BOT 5404 (A)	Advanced Plant Physiology	• To know and understand the experimental strategies and tools allowing widening and deepening the knowledge in plant physiology.
Botany	BOT 5404 (B)	Advanced Mycology and Plant Pathology	• Students will get detail knowledge of fungi in relation to human welfare
Botany	BOT 5304 (C)	Bryology	• Students will get detail knowledge of bryophytes from different localities.
Botany	BOT 5404 (D)	Students will get detail knowledge of origin and evolution of Angiosperms	• Students will get detail knowledge of origin and evolution of Angiosperms
Botany	BOT 5405	Practical's on BOT 5401,5402,5403	• Hands on training to students for plant disease management, plant biotechnological techniques.
Botany	BOT 5406	Research Projects and Summer Training	• To develop experts in research
Statistics	STAT-4101	Mathematical Analysis	• Understand the fundamentals ideas and applications of calculus, Employ technology to investigate mathematical concepts and applications.
Statistics	STAT-4102	Linear Algebra	• Students will demonstrate competence with the basic ideas of linear algebra including concepts of linear systems, independence, theory of matrices, linear transformations, bases and dimension, eigenvalues, eigenvectors and diagonalization.
Statistics	STAT-4103	Probability Distributions	• Develop problem-solving techniques needed to accurately calculate probabilities, Apply problem-solving techniques to solving real-world events, Apply selected probability distributions to solve problems.
Statistics	STAT-4104	Sampling Theory	• Define principal concepts about sampling, Explains the advantages of sampling, Lists the stages of sampling process, Categorizes and defines the sampling methods 5 Apply the Simple Random Sampling (SRS) method, To analyze and solve problems, Use statistical softwares.
Statistics	STAT-4201	Probability Theory	• Define principal concepts about sampling, Explains the advantages of sampling, Lists the stages of sampling process, Categorizes and defines the sampling methods, Apply the Simple Random Sampling (SRS) method, To analyze and solve problems, Use statistical softwares.
Statistics	STAT-4202	Parametric Inference	• To compute probability that the theory in question could produce the observed data. • To understand MP test, Neyman-Pearson fundamental lemma, UMP test, UMPU test.
Statistics	STAT-4203	Multivariate Analysis	• Analyze multivariate data and the dependence structure of variates to extract the useful information from a massive dataset. Apply suitable tools for exploratory data analysis, dimension reduction, and classification to formulate and solve real-life

			problems. • Analyzing Multivariate data using data reduction techniques like Principal Component Analysis, Factor Analysis.
Statistics	STAT-4204	Regression Analysis	• Tests of hypothesis of model parameters, AIC and BIC criteria, Interpretation of output produced by glm command in R.
Statistics	STAT-5301	Asymptotic Inference	• Students will be able to understand concept of Consistent estimator, CAN estimator, Likelihood Ratio Test (LRT), Wald's test, Score test, large sample test and asymptotic confidence interval, Students will be able to find asymptotic distributions of moment estimators, percentile estimators, maximum likelihood estimator, Students will be able to test the hypothesis
Statistics	STAT-5302	Design and Analysis of Experiments	• Students will be able to understand basic principles and various terms of Design of Experiments, Students will be able to apply Factorial design, fractional factorial design, confounding in real life problems, Students should be able to analyze the data of various experimental design.
Statistics	STAT-5303	Time Series Analysis	• Students can model time series data by various time series models like ARMA, ARIMA, SARIMA, ARCH and GARCH properties • Students will be able to use the Box-Jenkins approach to model and forecast time series data empirically • Students will be able to analyses time series data and use multivariate time series models such as vector auto regression (VAR), Students will be able to use ITSM, R and Python to fit an appropriate time series model and infer the results.
Statistics	STAT-5304 (A)	Data Mining	• Students can propose data-mining solutions for different applications, • Students would be able to evaluate different models used for data processing.
Statistics	STAT-5304 (B)	Design and Analysis of Clinical Trials	• Understand the basic statistical principles, methods for clinical data analysis and reporting, Demonstrate an understanding of the essential principles of modern bio-statistical methods and statistical software and how to apply them.
Statistics	STAT-5304 (C)	Optimization Techniques	• Students can identify and develop operational research models from the verbal description of the real system, Students will be able to understand the characteristics of different types of decision-making environments and decision-making approaches, Students can apply optimization techniques to take correct decision.
Mathematics	MAT4101	Real Analysis	• To understand Real Analysis and apply it to theoretical and practical problems
Mathematics	MAT4102	Advanced Calculus	• To apply these concepts to solve practical problems arising in Physics and other related areas

Mathematics	MAT4103	Group theory	• Use of Group Theory in solving problems of different of Mathematics such as Algebraic Topology, how Group Theory explains symmetry and hence have application in Physics, Chemistry and other subjects.
Mathematics	MAT4104	Numerical Analysis	• In real situations problems cannot be solve directly by available mathematical tools then use Numerical analysis to solve these problems with some error.
Mathematics	MAT4105	Ordinary Differential Equations	• Understanding of ODE and its applications to all Sciences as well as other real and practical problems.
Mathematics	MAT4106	Practical: Programming in C	• To use programming to make useful software in industry and use of Mathematics in them makes them more reliable and user friendly.
Mathematics	MAT4201	Complex Analysis	• Understanding of Complex Analysis and apply it to theoretical and practical problems.
Mathematics	MAT4202	Topology	• Use of topological concepts to solve problems in mathematics and real world.
Mathematics	MAT4203	Rings and Modules	• To understand rings and modules as a central concept in Algebra and their applications.
Mathematics	MAT4204	Linear Algebra	• Matrix representation of vector spaces, properties of vector spaces and their applications in real world.
Mathematics	MAT4205	Partial Differential Equations	• Solving of PDE and finding their applications.
Mathematics	MAT4206	Practical: Programming in C++	• For making useful software in industries, education and mathematics.
Mathematics	MAT5301	Combinatorics	• Students are able to understand the how to convert real life situations into a mathematical problem like arrangement problem, selection problems, distribution problems, Recurrence relation, Generating function and applications in Engineering , Physics , Number theory.
Mathematics	MAT5302	Field Theory	• Student will understand how to construct field containing all roots of given polynomial equation and applications in Algebraic topology, engineering, Galois theory
Mathematics	MAT5303	Functional Analysis	• Recognize inner product spaces, Identify duals of some normed spaces, Implementation of Spectral Theorem.
Mathematics	MAT5304	Graph Theory	• The students will be able to apply principles and concepts of graph theory in practical situations.
Mathematics	MAT5305	Applied Mathematics I	• Students are able to understand the difference and similarities in plane and Spherical trigonometry. They are also able to understand various celestial phenomenon, like rising and setting of stars, motion of sun, twilight, dip of horizon and effects of

			refraction on the observation of stars and planets in the sky.
Mathematics	MAT5306	Practical-Python	• This is most widely used computer programming language and hence student will get opportunities to work in software companies. Also they will understand direct application of mathematics in real life.
Mathematics	MAT5401	Number Theory	• Students are able to understand how to solve Diophantine Equation, how to find solutions of equation x 2 ≡ a(Nod p), Eulers thm , Fermats thm and its application in Field Theory, Algebraic Topology, Complex analysis.
Mathematics	MAT5402	Differential Geometry	• Students are able to understand the treatment of Level sets, Geodesics, The Weingarten map, smooth curve, line integral.
Mathematics	MAT5403	Fourier analysis	• Students are able to understand the treatment of Fourier Series and Their applications to Boundary Value Problems in PDE of Engineering and Physics, Study of Bessel Functions
Mathematics	MAT5404	Lattice Theory	• Student will be able to understand how lattices and Boolean algebra are used as tools and mathematical models in the study of networks
Mathematics	MAT5405	Applied Mathematics II	• Students are able to understand Keplers Law, Interior And Superior Planets. Satellite, Sideral Time, Elongation of Planet
Electronics	ELE4101	Mathematical Methods in Electronics and Network Analysis	• Students can understand the methods of analysis for CT and DT signals and systems, learn concept of mathematical modeling of simple electrical circuits also get familiar with role of differential equations in applied electronics and get knowledge about mathematical tools and techniques for network analysis.
Electronics	ELE4102	Integrated Circuit Analysis	• Students get the knowledge about physics of basic semiconductor devices and circuits, characteristics and working of electronic devices and the various device models. Also they understand wideband and narrow band amplifiers using BJT and develop skills in analysis and design of analog circuits and designs of opamp applications
Electronics	ELE4103	Digital System Design	• Students get introduction of VERILOG and understand sequential and combinational logic design techniques also they learn various digital circuits using VERILOG, VLSI devices and memories
Electronics	EL4104	Advanced ‘C’ Programming.	• Students can understand basic concepts of C programming language, various advanced features, graphics and interfacing and learn concepts of object oriented programming in C++.
Electronics	ELE4201	Applied Electromagnetics, Microwaves and	• Students can understand concepts of electromagnetics, the theory of transmission lines and wave guides, various parameters of antennas and various methods of generation of microwaves.

		Antennas	
Electronics	ELE4202	Instrumentation and Measurement techniques.	• Students can understand the configurations and functional descriptions of measuring instruments, the basic performance characteristics of instruments, working principles of various types of sensors and transducers and their use in measuring systems. Also they learn the techniques involved in various types of instruments and relevance of electronics with other disciplines.
Electronics	ELE4203	Advanced Embedded System Design	• Students can understand the basics of embedded system, communication standards, protocols and RTOS. They also learn the architecture of different 8-bitmicrocontrollers, embedded C and assembly language programming and real interfacing devices to microcontroller.
Electronics	ELE4204	Foundation of Semiconductor Devices	• Students can understand crystal structure with reference to semiconductors, quantum and statistical mechanics. They also learn operating principles of modern semiconductor devices, theory and characteristics of semiconductor devices
Electronics	ELE5301	Advanced Communication Electronics (4 Credits)	• Students can learn analog modulation techniques, basics of information theory and digital communication, they also learn various data digital communication systems and technologies.
Electronics	ELE5302	Advanced Embedded Systems (4 Credits)	• Students can understand study the architecture of Advanced RISC machine (ARM7), assembly level programming of ARM-7 and interfacing hardware. They also get acquainted with fundamentals of operating system, real time operating system (RTOS) and Raspberry pi.
Electronics	ELE5303	Digital Signal Processing	• Students get acquainted to fundamental aspects of Digital Signal Processing (DSP), mathematical background required for DSP, digital filters and implementation on digital Signal Processor. They also understand DSP applications and can apply digital filters according to known filter specifications. They also provide the knowledge about the principles behind the discrete Fourier transform (DFT) and its fast computation and are able to apply the MATLAB programme to digital processing problems and presentations.
Electronics	ELE5304	Programmable Logic Controllers-Programming and Applications	• Students are aware of programmable logic controller hardware, to ladder diagram and PLC programming. They also study some case studies using PLC.
Electronics	ELE5401	Control System	• Students are familiar with basic concepts of control theory, transfer function, models for analysis physical systems and introduce the control system components. They get

			basic knowledge in obtaining the open loop and closed–loop frequency responses of systems, stability analysis and design of compensators. They also get acquainted with latest trends in industrial control / production systems.
Electronics	ELE5402	Advanced Power Electronics	• Students can understand basic principles and applications of power electronics, solid-state devices required for power electronic circuits, power conversion and power transmission principles and study the industrial and domestic applications.
Electronics	ELE5403	Mechatronics and Robotics	• Students get acquainted with mechatronics, they understand the concepts of sensors, transducers and actuators, with a view to use them in Mechatronic systems, get basic knowledge of mechanical systems to be used with Electronic systems and introduce robot dynamics and robot joint control systems and also get quick overview of the Artificial intelligence and role of computer in Mechatronics and Robotics.
Electronics	EEL 5404	Wireless Sensor Network	• Students familiarize with wireless sensor network, get background of single-node architecture and wireless networking protocols also understand currently available sensor platforms and tools.
Comp.Sci.	COMP4101	Principles of Programming Language	• Students get acquainted with understanding fundamental language implementation techniques and compare various programming language designs.
Comp.Sci.	COMP4102	Cryptography and Network Security	• Learn the security concepts and techniques
Comp.Sci.	COMP4103	Database Technologies	• Compare different database technologies, Compare and contrast NoSQL databases with RDBMS.
Comp.Sci.	COMP4104	Design & Analysis of Algorithm	• Basic algorithms and data structure concepts, Basic programming concepts
Comp.Sci.	COMP4105	Programming with DOTNET	• Ability to write the Visualized programming and design different real life problems
Comp.Sci.	COMP4201	Digital Image Processing	• Review the fundamental concepts of a digital image processing system. • Analyze images in the frequency domain using various transforms. • Evaluate the techniques for image enhancement and image restoration. • Interpret image segmentation and representation techniques
Comp.Sci.	COMP4202	Data Mining and Data Warehousing	• Students will understand both the theoretical and practical aspects data mining. • Understand basic data mining algorithms, methods, and tools • Understand data mining principles and techniques. • Understanding the basic concepts of OLAP. • Understanding the basic concepts of Data Warehouse.

Comp.Sci.	COMP4203	Python Programming	• Students will understand both theoretical and practical knowledge of Python language
Comp.Sci.	COMP4204	Advanced Operating System	• This course provides an understanding of the functions of Operating Systems. It also provides an insight into functional modules of Operating Systems.
Comp.Sci.	COMP4207	Artificial Intelligence	• Concepts of Data structures and Design and Analysis of algorithms
Comp.Sci.	COMP5301	Mobile Technologies (Core)	• Students will understand about Different Mobile technologies and learn about how to develop android application
Comp.Sci.	COMP5302	Soft Computing (Core)	• Describe human intelligence and AI • Explain how intelligent system works. • Apply basics of Fuzzy logic and neural networks. • Understand the ideas of fuzzy sets, fuzzy logic and use of human experience relate with neural networks, generalize appropriate rules for inference systems • Understand the genetic algorithms and other random search procedures. • Develop some familiarity with current research problems and research methods in Soft Computing Techniques.
Comp.Sci.	COMP5303	Web Services (Core)	• Understand the principles of SOA • Efficiently use market leading environment tools to create and consume web services. • Identify and select the appropriate framework components in creation of web service solution.
Comp.Sci.	COMP5304	Software Architecture & Design Pattern	• Able to assist learner to utilize styles and views to state Architecture, define documentation, analyse the architectural structures and it's Influence on business and development process.
Comp.Sci.	COMP5307	Internet of Things	• Enable learners to understand System on Chip Architectures. • Introduction and preparing Raspberry Pi with hardware and installation. • Learn physical interfaces and electronics of Raspberry Pi and program them using practical's • Learn how to design IoT based prototypes.
Physics	PHY4101	Mathematical Methods in Physics	• From this course, the students are expected to learn some mathematical techniques required to understand the physical phenomena at the postgraduate level. • The students are expected to be able to solve simple problems in probability, understand the concept of independent events and work with standard continuous distributions. • The students will have idea of the functions of complex variables; solve nonhomogeneous differential equations and partial differential equations using simple

			methods. The students are expected to be able to solve simple problems on Fourier series and Fourier transform, Laplace transform etc.
Physics	PHY4102	Classical Mechanics	• The students will introduce about the forces, angular momentum and knowledge about the constraint. This paper enables the students to understand the Lagrangian and Hamiltonian approaches in classical mechanics. • The classical background of Quantum mechanics and get familiarized with Poisson brackets and Hamilton -Jacobi equation. The students should able to understand Kinematics and Dynamics of rigid body in detail and ideas regarding Euler's equations of motion
Physics	PHY4103	Quantum Mechanics- I	• Students should understand the drawbacks of Classical Mechanics and necessity of Quantum mechanics. • To understand the behaviour of particles under Classical and Quantum conditions. Students should understand the Operators in Quantum Mechanics. Students should Learn about Approximation Methods to solve problems
Physics	PHY4104	ELECTRONICS	• Manipulate voltage, current and resistances in electronic circuits. Demonstrate familiarity with basic electronic components and use them to design simple electronic circuits. Design and analyse of electronic circuits. Evaluate frequency response to understand behaviour of Electronics circuits.
Physics	PHY4105	ELECTRONICS LABORATORY-I	• Acquire technical and manipulative skills by using laboratory equipment, tools and materials. Demonstrate a deeper understanding of abstract concept and theories gained by experiencing and visualizing them as authentic phenomena. Understanding the basic design of circuit which related to experiment.
Physics	PHY4106	BASIC PHYSICS LABORATORY-I	• Acquire technical and manipulative skills by using laboratory equipment, tools and materials. Demonstrate a deeper understanding of abstract concept and theories gained by experiencing and visualizing them as authentic phenomena. Acquire the complementary skills of collaborative learning and teamwork in laboratory.
Physics	PHY4201	PHYSICS OF SEMICONDUCTOR DEVICES	• The students should able to utilize semiconductor models to analyze carrier densities and carrier transport. • The students should able to understand and utilize the basic governing equations to analyze semiconductor devices. The students should able to understand and analyze the inner working of semiconductor pn diodes, Schottky barrier diodes and new semiconductor devices. The students should able to explain how the metal-semi conductor contacts will occur.

			• The students should able to explain the working principle of a junction transistor. 6. The students should able to discuss conduction in semiconductors – charge carriers, intrinsic/extrinsic, p-type, n-type. • The students should able to Know the physics of semiconductor junctions, metalsemiconductor junctions and metal-insulator-semiconductor junctions. The students should able to apply the knowledge of semiconductors to illustrate the functioning of basic electronic devices.
Physics	PHY4202	ATOMS, MOLECULES & LASER	• Understand the concept of atomic spectra origin of spectral line, fine and hyperfine structure, Zeeman pashen and stark effect. • Describe the coupling scheme metastable state, types of pumping and different applications of laser. Understand the concept of Frank Condon principle, ESR, NMR etc. Understand the concept of different types of laser. Demonstrate quantitative problem solving skills in all the topics covered.
Physics	PHY4203	QUANTUM MECHANICS II	• Students should understand the concept of central forces and scattering phenomena. Students should learn about partial wave analysis. • Students should understand and learn theoretical aspects at Quantum Level. Students should know more about the insight of the microscopic world. Students should understand the behaviour of particles under Classical and Quantum conditions.
Physics	PHY4204	ELECTRODYNAMICS	• Understand the concept of multiple expansions and deeper meaning of Maxwell's equations. • Understand the technique of deriving formulae for the electromagnetic waves in stationary and conducting medium. • Calculate the electromagnetic radiations from moving charges ,taking into account retardation effects and make a detailed account for Gauge transformations. Embracing the concepts of special relativity as emerged through the laws of electrodynamics. To formulate and solve the electromagnetic problems skills In all the topics covered.
Physics	PHY4205	ELECTRONICS LABORATORY-II	• Acquire technical and manipulative skills by using laboratory equipment, tools and materials. Demonstrate a deeper understanding of abstract concept and theories gained by experiencing and visualizing them as authentic phenomena. Understanding the basic design of circuit which related to experiment. • Acquire the complementary skills of collaborative learning and teamwork in laboratory
Physics	PHY4206	BASIC PHYSICS LABORATORY-II	• Acquire technical and manipulative skills by using laboratory equipment, tools and materials. Demonstrate a deeper understanding of abstract concept and theories

			gained by experiencing and visualizing them as authentic phenomena. • Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.
Physics	PHY5301	Statistical Physics	• Understand the relevant quantities used to describe macroscopic systems ,thermodynamic potentials and ensembles • Understand the concepts of partition functions by taking into account the different types of ensemble • Describe the consequences in classical and quantum statistics • Embracing the concepts of ideal Bose and fermi systems through the principle of statistical Mechanics • Show an analytic ability to solve the statistical mechanics problems
Physics	PHY5302	Solid State Physics	• The course aims through a theoretical and experimental approach to give fundamental insights into solid state physics. • The students should be able to do quantitative calculations based on established theoretical models to describe the properties of materials. • The Students should Knows Effective mass and E-k relationship • Students will gain knowledge of basic theories of the magnetic properties of materials. • Students will be able to analyze electron transport and energy related problems by applying quantum mechanical principles • Students will be able to analyze the lattice vibration phenomenon in the solids
Physics	PHY5303	CB Group –I A) Physics of thin films-I	• Discuss the differences and similarities between different vacuum-based deposition techniques, • Evaluate and use of different models for nucleation and growth of thin films • Asses the relation between deposition technique, film structure and film properties • Discuss typical thin film applications such as solar cell, photo catalysis, gas sensors, super capacitor etc • Motivate selection of deposition techniques for various applications. • Comprehend the materials presented in the lecture and to draw conclusions from them, as well as to actively communicate the contents presented during the lecture.
Physics	PHY5303	B) Nano-technology-I	• Students will be able to learn about the background on Nanoscience • Students will be able to understand the synthesis of nano materials and their application and the impact of nano materials on environment • Students will be able to apply their learned knowledge to develop Nanomaterial’s.

			• Students will be able to apply principles of basic science concepts in understanding, analysis and prediction of matter at Nano scale. 5. Students will be able to introduce advanced ideas and techniques required in emergent area of nano technology. 6. Students will be able to understand and apply mathematical techniques for describing and deeper understanding of nano systems.
Physics	PHY5303	C) Biomedical Instrumentation-I	• Explain the different medical imaging systems, compare advantages and disadvantages, understand the limitations and find the best suitable method for different pathological diagnoses. • Explain and describe different diagnostic measurement methods for identification of human biopotentials and their necessary instrumentation
Physics	PHY5304	A) Electronic Instrumentation-I	• Understand the principles and functions of different instruments. • Use different instruments for measurement of various parameters. • Design experiments using sensors.
Physics	PHY5304	B) Laser-I	• Describe the requirements for a system to act as a laser. • Differentiate the various types of lasers and their means of excitation. • Relate the structure and properties of lasers to their performance and intended applications.
Physics	PHY5304	C) Energy Studies-I D	• Define basic properties of different renewable sources of energy and technologies for their utilisation • Describe main elements of technical systems designed for utilisation of renewable sources of energy • Understand the concept of Biomass energy resources and their classification, types of biogas Plants- applications
Physics	PHY5304	D) MICROCONTROLLER– I	• Explain the planning of memory of microcomputer system. • Examine the construction of CPU, know registers and bus systems. • Compare microprocessors and microcontroller. Know the structural differences between microprocessors and microcontrollers
Physics	PHY5401	Nuclear & Particle Physics	• Understand the basic concepts of general properties of nuclei • Usage of basic laws in determination of particle properties and properties of processes in the subatomic world. • Describe the particle interactions with matter and basic models of the atomic nucleus • Embracing the concepts of the radiation detectors and accelerators • Describe the Nuclear Physics applications

Physics	PHY5402	Material Science	• Qualitatively describe the bonding scheme and its general physical properties, as well as possible applications. • Describe physical origin of defects and its effects on various mechanical, electrical, thermal and other properties of the materials. Describe resultant elastic properties in terms of its 1D and 2D defects. • Understand diffusion mechanisms and solve problems related to diffusion processes. • Derive various metallurgical thermodynamics equations and functions. • Understand and apply Gibb's phase rule to various systems of materials. • Understand alloy systems, families of engineering alloys • Understand thermodynamic origin of phase diagrams, draw phase diagrams and understand phase diagrams and also apply their knowledge of phase diagrams for various applications. 8. Understand Phase transformation mechanisms.
Physics	PHY5403	A) Physics of thin films-II	• Identify the signals and systems • Apply the principles of discrete-time signal analysis to perform various signal operations • Apply characterization techniques for microstructure examination at different magnification level and use them to understand the microstructure of various materials • Determine crystal structure of sample and estimate its crystallite size
Physics	PHY5403	B) Nano-technology-II	• Students will be able to learn about the background on Nanoscience • Students will be able to understand the synthesis of nano materials and their application and the impact of nano materials on environment • Students will be able to apply their learned knowledge to develop Nanomaterial's. • Students will be able to apply principles of basic science concepts in understanding, analysis and prediction of matter at Nano scale. • Students will be able to introduce advanced ideas and techniques required in emergent area of nano technology. • Students will be able to understand and apply mathematical techniques for describing and deeper understanding of nano systems.
Physics	PHY5403	C) Biomedical Instrumentation	• Analyse and evaluate the effect of different diagnostic and therapeutic methods, their risk potential, physical principles, opportunities and possibilities for different medical procedures. • Understand and describe the physical and medical principles used as a basis for

			biomedical instrumentation.
Physics	PHY5404	A) Electronic Instrumentation-II	• Understand the use of block diagrams & the mathematical basis for the design of control systems • Design and tune process (PID) controllers; • Understand the importance and application of good instrumentation for the efficient design of process control loops for process engineering plants.
Physics	PHY5404	B) Laser-II	• Demonstrate competence in the use of various procedures and instruments for the assembly and characterisation of laser systems. • Demonstrate an awareness of the safety responsibilities involved in working with lasers.
Physics	PHY5404	C) Energy Studies-II	• The course providing a basic understanding of theory and practice of various photovoltaic technologies and design concepts. • To understand the physical principles of the photovoltaic (PV) solar cell • Discuss the positive and negative aspects of solar energy in relation to natural and human aspects of the environment.
Physics	PHY5404	D) Microcontroller– II	• Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller. • Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.
Microbiology	MICRO4101	Microbial Systematics and Diversity	• Acquire basic skills on bioinformatics tools to study the taxonomy • Introduce the concepts of application and research in Microbiology
Microbiology	MICRO4102	Quantitative Biology	• Students should be able to apply descriptive and inferential statistics on the data collected during research work. • Students should be able to organise and represent the collected data appropriately.
Microbiology	MICRO4103	Biochemistry	• Students will be able to demonstrate an understanding of fundamental biochemical principles, metabolic pathways and the regulation of biochemical processes. • Students will be able to develop in- depth understanding of the area of biochemistry to choose for the research purpose.
Microbiology	MICRO4104	Cell Biology	• Use and apply those facts, concepts, and principles appropriately, even in situations that you have not previously encountered. • Interpret and evaluate evidence for hypotheses about cell structure and function. • Devise strategies to address unsolved issues in cell biology.
Microbiology	MICRO4105	Practical Course:	• Students will learn different isolation techniques used for isolation of organisms from

		Microbial Systematics	their natural habitat. • Students will train in isolating and characterizing different extremophiles.
Microbiology	MICRO4106	Practical Course: Cell biology and Biochemistry	• Students should be able to apply basic principles of chemistry to biological system. • Student should be able to execute quantitative analysis and statistics to interpret biochemical data.
Microbiology	MICRO4201	Virology	• Student will understand principles of virus pathogenesis. • Students will understand viral replication strategies and compare replication • mechanism used by viruses.
Microbiology	MICRO4202	Instrumentation	• To enrich students' knowledge and train them in the instrumentation • To allow students to understand about various separation and analytical techniques.
Microbiology	MICRO4203	Metabolism	• Enrich students' knowledge and train them in the pure microbial sciences • Introduce the concepts of application and research in Microbiology
Microbiology	MICRO4204	Evolution and Ecology	• Students will be equipped to understand the evolutionary background and its importance. • Students will acquire a theoretical understanding of population and community ecology to apply in the current issues in ecology.
Microbiology	MICRO4205	Practical Course: Biophysics & Virology	• Students will learn process of gel filtration chromatography • Students will learn and practice different methods used for isolation of viruses
Microbiology	MICRO4206	Practical Course: Enzymology & Microbial Metabolism	• Students will able to Understand kinetics of enzymes • Students will learn to isolate Nitrogen fixers and detect secondary metabolites produced by them
Microbiology	MICRO4207	Skill Development	• Enrich students' knowledge and train them in the pure microbialsciences Introduce the concepts of application and research in Microbiology
Microbiology	MICRO5301	Immunology	• Students will be able to describe immunological response and how it is triggered and regulated. Students will be able to describe role of immune system.
Microbiology	MICRO5302	Molecular Biology I	• Students will understand principle and techniques of molecular biology.
Microbiology	MICRO5303	Industrial Waste Water Treatment	• Students will understand waste water treatment processes of different industries.
Microbiology	MICRO5304	Biophysical Techniques	• Students will be able to learn molecular structure determination.
Microbiology	MICRO5305	Practical Course: Practical course based on Immunology, Pharmaceutical	• Students will learn different CLSI guidelines • Students will learn different parameters to estimate pollution load

		Microbiology and Industrial waste water treatment	
Microbiology	MICRO5306	Practical Course: Practical course based on Molecular Biology (I and II) and Microbial Technology	• Students will learn immobilization testing parameters. • Students will learn gene annotation.
Microbiology	MICRO5401	Pharmaceutical Microbiology	• Students will understand drug discovery and development.
Microbiology	MICRO5402	Molecular Biology II	• Students will understand issues related to GMOs and their application.
Microbiology	MICRO5403	Microbial Technology	• Students will learn downstream process of different fermented products
Microbiology	MICRO5404	Medical Microbiology	• Students will able to learn multidrug resistance in bacterial pathogens.
Microbiology	MICRO5405	Dissertation I	• Students will able to learn basics of research process.
Microbiology	MICRO5406	Dissertation II	• Students will able to learn basics of research process.
Chemistry	CHP-4101	Fundamentals of Physical Chemistry-I	• Student should understand the thermodynamic concepts in detail • Student should understand Basic concepts of quantum chemistry concepts. • Student should understand chemical kinetics of complex reactions. • Student should understand the polymerization process & to find out molecular weight of polymer. • Student should know the concepts of statistical thermodynamics in detail.
Inorganic Chemistry	CHI-4102	Molecular Symmetry & Chemistry of P-Block Elements	• To develop knowledge about imagine molecule. • To develop scientific attitude • To develop knowledge of point group and apply it to molecule.
Organic Chemistry	CHO-4103	Basic organic chemistry	• Students will be able to give correct nomenclature to organic compounds • They will differentiate between aromatic and non-aromatic compounds. • They will learn new concept like qazi and Homo aromatic compounds. • Students will be able to apply stereochemical concepts in organic synthesis. • They can gain knowledge of stereospecificity and stereoselectivity • Students will apply stereochemical concepts in asymmetric synthesis

Analytical Chemistry	CHA-4104	Safety in Chemical Laboratory and Good Laboratory Practices	• Importance of safety and health in Laboratory • security management • Introduction to Good Laboratory Practices and its applications • Managing chemical waste • Precautions of hazardous chemicals • Effects of hazards on human body.
Physical Chemistry	CHP-4105	Physical Chemistry Practical	• Study the Hydrolysis of aniline hydrochloride. • Determination of equivalent conductance at infinite dilution and dissociation constant of acetic acid. • Determination of critical micelle concentration (CMC) and □G of micellzation of sodium dodecyl sulphate (SDS). • Determination of G, H, and S of silver benzoate by conductometry.
Organic Chemistry	CHO-4106	Organic Chemistry Practical	• Student should understand reaction conditions and reagent used. • Student should understand workup of the reaction and purification by different techniques. • Student should able to take melting and boiling point of products. • Student should able to perform Isolation of natural products.
Physical Chemistry	CHP-4201	Fundamentals of Physical Chemistry-II	• Student should understand the thermodynamic concepts in detail • Student should understand Basic concepts of quantum chemistry concepts. • Student should understand chemical kinetics of complex reactions. • Student should understand the polymerization process & to find out molecular weight of polymer. • Student should know the concepts of statistical thermodynamics in detail.
Inorganic Chemistry	CHI- 4202	Coordination and Bioinorganic Chemistry	• To develop knowledge of hybridization, microstate term symbols. • To develop scientific attitude • To develop knowledge of correlation diagram, charge transfer spectra etc.
Organic Chemistry	CHO-4203	Synthetic organic chemistry and spectroscopy	• Student should understand the Chemical shifts and factors affecting chemical shifts • Student should understand first order and second order spectra • Student should understand the coupling constant and spin notations. • Student should understand and solve the simple to moderate spectroscopy problems
Analytical Chemistry	CHA-4204	General Chemistry	• Importance of safety and health in Laboratory • security management

			• Introduction to Good Laboratory Practices and its applications • Managing chemical waste • Precautions of hazardous chemicals • Effects of hazards on human body
Inorganic Chemistry	CHI-4205	INORGANIC CHEMISTRY PRACTICALS	• Work effectively and safety in a laboratory environment. • Work in teams as well as independently. • To analyse the chemical problems
Analytical Chemistry	CHA-4206	Analytical Chemistry Practical	• Study the Hydrolysis of aniline hydrochloride. • Determination of equivalent conductance at infinite dilution and dissociation constant of acetic acid. • Determination of critical micelle concentration (CMC) and G of micellzation of sodium dodecyl sulphate (SDS). • Determination of G, H, and S of silver benzoate by conductometry.
Analytical Chemistry	CHA-5301	Analytical Method Development & Validation, Nanotechnology	• Student should understand the accuracy & specificity of analytical procedure with precise agreement • Student should learn the process that determines detection & quantitation for the estimation of drug components. • Student should understand the chromatographic terms. • To help them understand in broad outline of nanoscience & nanotechnology.
Analytical Chemistry	CHA-5302	Electrochemical Methods and Food Analysis	• Student should understand the methods of food analysis • Student should understand qualitative information about electrochemical processes. • Student should understand applications of coulometry, voltametry, etc.
Analytical Chemistry	CHA-5303	Pharmaceutical Analysis	• Student should understand the chemistry of drugs with respect to their pharmacological activity. • Understand the methods of dissolution • Student should know role of FDA • Student should understand the WHO & ICH guidelines for evaluation of herbal drugs.
Analytical Chemistry	CHA-5304	Analytical Spectroscopy	• Student should understand XRD in detail. • Student should understand SEM, TEM, STEM • Student should know various methods of analysis. • Student should understand the Luminescence phenomenon
Analytical	CHA-5401	Forensic science	• Student should learn about how to collect, store & analyze all types of evidences.

Chemistry			• Student should understand the various techniques for analysis of evidences. • Student should understand the methods like PCR, RFLP, STR. • Student should learn about methods of hair, drug, blood, alcohol analysis.
Analytical Chemistry	CHA-5402	Advances in Analytical Techniques	• Student should understand various methods of solvent extraction • Student should understand AAS, AFS, AMS techniques. • Student learns applications of atomic spectroscopy. • Student should solve numericals.
Analytical Chemistry	CHA-5403	Analytical methods for Analysis of fertilizers, detergents, Water, and Polymer, Paint and pigment	• Student should understand the methods of fertilizer analysis • Student should understand the methods of water analysis • Student should know methods of polymer, paint, pigment analysis. • Student should understand the polymerization process & to find out molecular weight of polymer.
Analytical Chemistry	CHA-5404	Method of Analysis and Applications	• To learn about immunological methods • To study about detective of abnormal levels of glucose, creatinine, unic acid in blood • Student should understand the methods of analysis of ore & alloys. • Student should understand the methods of soil analysis • Student should know the collection & storage of blood samples. • Student should solve the numerical based on all the topics included in this course.
Inorganic Chemistry	CHI-5301	Organometallic Chemistry & Homogeneous catalysis	• Student should able to understand the Organometallic compounds • To understand carbene and carbynes and their bonding • To understand carbocyclic polyenes compound • Student should able to calculate metal- metal bond and structure of OMC • Student should able to draw catalytic cycle for C-C coupling reaction • Student should able to differentiate between homogenous and heterogeneous catalysis.
Inorganic Chemistry	CHI-5302	Inorganic reaction mechanism and photochemistry	• Student should be able to understand the types of mechanism • Student should able to understand electrophillic and nucleophillic substitution reaction. • To understand the concept of types of reactions • To understand the inorganic photochemistry • To understand the magnetic properties of coordination compound
Inorganic Chemistry	CHI-5303	Physical Methods in Inorganic Chemistry	• To understand thermal techniques and its applications.

			• To understand method to predict structure of unknown compound by using instrumental • techniques such as XRD, ESR, Mossabauer etc. • To understand microscopic techniques
Inorganic Chemistry	CHI-5304	Bioinorganic and Inorganic medicinal chemistry	• To understand the bioinorganic chemistry • To understand role of metals in bioinorganic chemistry. • To understand the importance of inorganic chemistry in medicinal field. • To understand biochemistry of enzymes containing various metals such as Zn, Ni, Mo, Cu, Mn, etc.
Inorganic Chemistry	CHI-5401	Heterogeneous Catalysis and Inorganic polymers	• To understand the principle and applications of heterogeneous catalysis. • To understand zeolite compounds and their characterization techniques. • To learn advance materials in catalysis. • To understand inorganic polymers and their applications.
Inorganic Chemistry	CHI: 5402	Material science I: Inorganic materials & solid state chemistry	• To learn about inorganic materials and solid state chemistry • To understand superconducting materials & its applications. • To understand material science and engineering
Inorganic Chemistry	CHI: 5403	Material Science-II: Nanomaterials	• To learn synthesis and characterization of nanomaterials • To understand microscopic techniques. • To understand applications of nanotechnology.
Inorganic Chemistry	CHI: 5404	Inorganic applications in industrial and environmental chemistry	• To understand electrochemical applications in inorganic chemistry
Organic Chemistry	CHO-5301	Designing of organic synthesis and Heterocyclic Chemistry	• Student should understand the protection and deprotection in acidic , basic and neutral reaction condition. • Student should understand the basic concepts of reterosynthesis and synthesis of target molecule. • Student should understand the advantages and disadvantages of divergent and convergent synthesis. • Student should understand the reactivity of five and six membered heterocyclic compounds.
Organic Chemistry	CHO-5302	Spectroscopic Methods in Structure	• Student should understand the Chemical shifts and factors affecting chemical shifts • Student should understand first order and second order spectra

		Determination	• Student should understand the AMX spin notations. • Student should understand and solve the simple to moderate spectroscopy problems
Organic Chemistry	CHO-5303	Organic Stereochemistry-I and Organic Reaction Mechanism	• Student should understand the effect of axial and equatorial substituents. • Student should understand nomenclature of fused, bridged and caged ring system. • Student should understand the reactivity and stability of carbanion, carbenes and nitrenes. • Student should understand formation and applications of enamines.
Organic Chemistry	CHO-5304	Photochemistry, Free radicals and Pericyclic Reactions	• Student should understand basic principles, photochemistry of carbonyl compounds, alkenes, dienes and aromatic compounds. • Student should understand mechanism and product formation in different photochemical reactions. • Student should understand the reactivity and stability of free radicals. • Student should understand Electrocyclic reactions, Cycloaddition reactions, Chelotropic reactions, Sigmatropic reactions
Organic Chemistry	CHO-5305	Single stage preparations	• Student should understand reaction conditions and reagent used. • Student should understand workup of the reaction and purification by different techniques. • Student should able to take melting and boiling point of products. • Student should able to perform Isolation of natural products.
Organic Chemistry	CHO-5306	Double and multiple stage preparations	• Student should understand reaction conditions and reagent used for different steps. • Student should understand workup of the reaction and purification by different techniques. • Student should able to take melting and boiling point of products. • Student should able to perform multistep reactions.
Organic Chemistry	CHO–5401	Chemistry of Natural Products-I	• Student can learn different methods of extraction , separation and purification of Natural products. • Students can learn characterization of natural product by spectral techniques. • Students will expertise in the synthesis of different types of natural product. • Student will gain knowledge of mechanisms and Stereochemistry involved in biological chemistry.
Organic Chemistry	CHO-5402	Advanced Synthetic Organic Chemistry	• Student will learn click chemistry and related important reactions. • Students will get knowledge of organoboranes in details

			• Students will be expertise in various coupling reactions • Students will get knowledge of green chemistry and various transformation related to green chemistry.
Organic Chemistry	CHO-5403	Biomolecules, Org chemistry of drug design and chiral drugs	• Student will learn in detail Stereochemistry and synthesis of various bimolecule • Students will expertise in chiral drug design and their synthesis • Students will get knowledge of organic chemistry in drug design • Students will learn in detail chemistry of amino acid, protein, enzymes and lipid
Organic Chemistry	CHO-5404	Organic stereochemistry II and Asymmetric Synthesis	• Student will learn isomerism and Stereochemistry of olefin in detail • Students will get knowledge of determination of Stereochemistry of organic compound using NMR. • Students will expertise in application of asymmetric synthesis. • Students will learn importance of various reactions involved in asymmetric synthesis
Organic Chemistry	CHO-5405	Innovative experiments in organic chemistry	• Student will learn use of phase transfer catalyst in different synthesis. • Students will expertise in microwave, photochemical and enzyme catalyzed reactions. • Student will get the knowledge in the synthesis using green catalyst (ionic liquid, nanoparticles) • Due to industrial visit during study tour students will get industrial knowledge which will be helpful for their future opportunities.
Zoology	ZOO:4101	Biochemistry & Bioenergetics	• Understand structures and functions of biomolecules Such as carbohydrates, proteins, lipids and nucleic acids. • Understand the role of biomolecules in metabolic pathways. • Understand the Enzymes, kinetics and energetics. • Get well prepared for research in life sciences. • Students will gain proficiency in basic laboratory techniques and be able to apply the scientific method in the processes of experimentation and hypothesis testing.
Zoology	ZOO:4102	Cell Biology & Genetics	• Comprehensive, detailed understanding of the chemical basis of heredity. • Comprehensive and detailed understanding of genetic methodology and how quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms. • Understanding of how genetic concepts affect broad societal issues including health and disease, food and natural resources, environmental sustainability, etc. • Understanding the role of genetic mechanisms in evolution.

			• The knowledge required to design, execute, and analyse the results of genetic experimentation in animal and plant model systems. • Students will understand the structures, biochemical composition and Functions of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles • Various Techniques of cell Study • Students will understand the cellular components for mitotic cell division. • Students will apply their knowledge of cell biology responses to environmental or physiological changes, or alterations of cell function brought about by mutation or Cancer • Student understands cell apoptosis, necrosis and senescence • Students will come to know about the intrinsic and extrinsic factors for causes of cancer. • Understand types of cancer, biological entities responsible for it. • How cells are newly form and the chromosome number is maintain for formation of gametes
Zoology	ZOO:4103	Fresh Water Zoology & Ichthyology	• Students learn about the aquatic ecosystem, lentic and lotic habitat as well the ephemeral water bodies. • Students learn about the different parameters of physical conditions of water. • Students learn about the different parameters of chemical conditions of water and its importance to the aquatic life. • Students learn the different physiological and protective adaptations. • Students understand the relation of Amphibia and water with the life cycle of frog and the tadpole as important herbivores. • Students learn different adaptations in turtles and crocodiles with economic importance. • They can also understand the taxonomic and phylogenetic relationships of fish and fish-like vertebrates within the context of all vertebrate groups.
Zoology	ZOO:4104	Skills in Scientific Communication and Writing & Biostatistics	• Students will learn the importance English language in scientific communication. • Students will learn the organization of research papers and review articles. • Students will understand about the project proposal for obtaining research grants. • Students will study how to analyze and represent the numerical data.

			• Students will learn to compare the variables and to predict unknown from known data. • Students will understand the parametric and non-parametric tests and distributions of data. • Students will study the tests of comparison of data by various statistical tests.
Zoology	ZOO:4201	Molecular Biology	• Students will understand the central dogma of molecular biology. • Candidates will know about the process like replication, transcription and translation. • Student will know the regulation of gene and its expressions. • Students will understand the basic principle, advanced techniques in molecular biology.
Zoology	ZOO:4202	Developmental Biology	• Student will learn the molecular mechanism of development. • Student will come to know the differentiation pre and post embryonic developments. • They will get to know various types of pattern formation • They will get in touch with new horizons and discoveries in the field of embryology
Zoology	ZOO:4203	Comparative Animal Physiology and Endocrinology	• Student will learn all body systems among different kind of animals with their comparison to trace similarities and differences between them. • Student will come to know about difference between thermo-biological and osmoregulatory mechanisms among different animal groups. • Students will understand neuroendocrinology amongst different animal groups ranges in amphibians, cephalopod molluscs, mammals and human beings. • Student will get motivated to take up the subject of physiology for their research .
Zoology	ZOO:4204	Biological Techniques	• Student will learn the working of instruments. • Student will come to know the basic and advance techniques in life sciences. • They will get to know about separation and isolation of biomolecules. • They will understand the application of computer and biological databases in research.
Zoology	ZOO: 5301	Entomology- I Or	• Know the Systematics of class Insecta. • Have a good understanding of the primary concepts in Entomology • Get well prepared for research in Entomology under life sciences. • Understand socio-economical interactions of insects with human
Zoology	ZOO: 5301	Animal Physiology I Or	• Understand functioning of Excretion via kidneys and other excretory organs of animals. • Understand the physiology of membrane and physiological aspects of metabolism.
Zoology	ZOO: 5301	Genetics I	• Understand genomics and genetics of model organisms. • Understand the evolution from genetics point of view.

Zoology	ZOO: 5302	Insect Physiology, Biochemistry and Ecology	• Understand the insect physiology and biochemistry in depth. Have the knowledge of insect population dynamics and behavioral adaptations.
Zoology	ZOO: 5303	Mammalian Reproductive Physiology and Histology & Histochemistry	• Create awareness about Sexual Transmitted diseases. • Describe the changes that occur in the reproductive system over the lifetime of an individual. • Identify the major hormones involved in reproduction and describe their role in regulating reproduction in males and females. • Describe the processes that can lead to dysfunction of the reproductive system. • Understand the general principles of Histochemistry. • To gather hazardous materials information and will recognize and respond properly to potential hazards of handling chemicals and chemical waste. • Able to design an experimental procedure. • Explore career opportunities and participate in career and graduate school planning through organization and activities. • Gather hazardous materials information and will recognize and respond properly to potential hazards of handling Chemicals and chemical waste. • Design an experimental procedure. • Explore career opportunities and participate in career and graduate school planning through organization and activities.
Zoology	ZOO: 5304	Economic Zoology	• Understand the role of different cultures in day to day life. • Understand the different industries with economic profit. • Develop ability to start their own farms.
Zoology	ZOO: 5401	Entomology- II Or	• Understand growth and development in insects. • Understand the adaptive mechanisms in insects. • Prepare for research projects in life sciences
Zoology	ZOO: 5401	Animal Physiology-II Or	• Understand the physiology of animals in detail. • Design research problems based on human physiology .
Zoology	ZOO: 5401	Genetics-II	• Understand genomics and genetics of model organisms. • Understand the evolution from genetics point of view.
Zoology	ZOO: 5402	Immunology and Parasitology	• Understand the details of immune response. • Design the experiments related to immunity and parasites. • Understand pathogenicity of various parasites.

Zoology	ZOO: 5403	Pest Control and toxicology	• Understand the consequences of chemical pesticides. • Acquire knowledge about the importance of integrated pest management.
Zoology	ZOO: 5404	Environmental Biology and Animal Systematics & Diversity	• Describe different systematic principles and what the classification system of animals is based on Understand the ecological and statistical techniques and approaches used in the study of Environmental biology. • Appreciate the impact of human activities on other life and environment.

BBA

Paper Code	Paper Name	Outcome
BBA1101	Business Organization and System	• To give the Practical knowledge of Business Organization & System. • To make the students aware about various activities of business, business practices and recent trends in business world. • To study the challenges before the business and setting up of a business enterprise. • To develop the spirit of entrepreneurship among the students.
BBA1102	Basics of Business Communication Skills	• To understand the basic concept s, process and importance of Business communication. • To study different media of communication. • To study skills required for effective written and oral communication. • To make student capable of using communication skills in the business world.
BBA1103	Business Accounting	• To enable the students to acquire sound knowledge of basic concepts of accounting. • To impart basic accounting knowledge. • To impart the knowledge about recording of transactions and preparation of final accounts. • To acquaint the students about accounting software packages.
BBA1104	Business Economics [Micro]	• To expose students to basic micro economic concepts. • To apply economic analysis in the formulation of business policies. • To use economic reasoning to problems of business.
BBA1105	Business Mathematics	• To understand applications of matrices in business. • To understand the Shares and Dividends. • To use L.P.P. and its applications in business. • To understand the concept of Transportation problems & its applications in business world. • To understand the concept and application of Permutations & Combinations in business
BBA1106	Business Demography And Environmental Studies	• To develop knowledge base for demographic and environmental factors affecting business. • To make the students aware of environmental problems related to business and Commerce. • To inculcate values of Environmental ethics amongst the students. • To study Demographic Environment (Social, Cultural, Political, Legal).
BBA1201	Principles of Management	• To provide conceptual knowledge to the student regarding nature, complexity and functions of management. • To give historical perspective of management. • Students will also gain some basic knowledge of recent trends and international aspects of management.
BBA1202	Principles of Marketing	• To study the basic concepts in marketing. • To study scope of marketing functions. • To analyze the important concepts in marketing.

		• To study need of marketing function in business organization.
BBA1203	Principles of Finance	• To provide understanding of nature, importance, structure of financerelated areas. • To impart knowledge regarding sources of finance for a business.
BBA1204	Basics of Cost Accounting	• To impart the knowledge of basic cost concepts & preparation of Cost Sheet. • To provide basic knowledge of Methods of costing and Overheads.
BBA1205	Business Statistics	• To understand the basics of statistics, concept of population &sample with illustrations. • To understand correlation, use of regression analysis and its applications. • To understand the concepts of time series analysis and its applications in the business. • To study the Index Numbers and how to use its applications in Business.
BBA1206	Business Informatics	• To know the basics of Computer • To understand the basics of networking • To understand use of computer in business activities. • To know the basics of database management system.
BBA2301	Personality Development	• To make the students aware about the dimensions and importance of effective personality. • To understand personality traits and formation and vital contribution in the world of business. • To make the students aware about the various dynamics of personality development.
BBA2302	Business Ethics	• To impart knowledge of Business ethics to the students. • To promote Ethical Practices in the business. • To develop Ethical and Value Based thought process among the future manager's entrepreneur.
BBA2303	Human Resource Management	• Introducing the students with the concepts of Human Resource Management and its different functions in an organization. • Focusing on Humans as an important asset for development of organizations. • Analyzing different methods of selection , recruitment , training and development of Human Resourse. • Concepts of organizational development. • Concepts of organizational behavior.
BBA2304	Management Accounting	• To impart basic knowledge of Management Accounting. • To know the implications of various financial ratios in decision making. • To study the significance of working capital in business. • To understand the concept of budgetary control and its application in business. • To develop the calculating ability of various techniques of management accounting.
BBA2305	Business Economics [Macro]	• To study the behavior of working of the economy as a whole. • To develop an analytical framework to understand the inter-linkages among the crucial macroeconomic variables. • To apply economic reasoning to problems of business and public policy.
BBA2306	Information Technology in	• To impart the knowledge of Information technology and its use in management.

	Management.	• To introduce the concepts of digital firm. • To explain basics related to information technology. • Identifying business value of information.
BBA2401	Production and Operations Management.	• To focus on basic terms related to production and operations management. • Analysing product design concepts,Production layouts , Plant locations. • To elaborate the concepts of production planning, productivity and ergonomics. • To identify the concepts of quality management.
BBA2402	Industrial Relation and Labor Law.	• To acquaint the student to develop an understanding of the legal framework of industrial & labour laws. • To impart the students with the knowledge of laws & how law affects the industry & labour.
BBA2403	Business Taxation	• To understand the basic concepts and definitions under the Income Tax Act, 1961. • To update the students with latest development in the subject of taxation. • To Acquire knowledge about Computation of Income under different heads of Income of Income Tax Act, 1961. • To acquire knowledge about the submission of Income Tax Return, Advance Tax, Tax deducted at Source, Tax Collection Authorities. • To prepare students Competent enough to take up to employment in Tax planner. • To develop ability to calculate taxable income of firms, co-operative societies and charitable trust.
BBA2404	International Business	• To acquaint the students with emerging issues in international business. • To study the impact of international business environment on foreign market operations of a firm. • To understand the importance of foreign trade for Indian economy
BBA2405	Management Information System	• To understand the concepts of information system. • To study the concepts of system analysis and design. • To understand the issues in MIS.
BBA2406	Service Sector Management	• To understand the basic concept of service marketing. • To study the service operations methods. • To study the major services in detail.

BBA(CA)

Paper Code	Paper Name	Outcome
BCA1101	Logic in Computer Science	• Student will able to understand fundamental concepts in propositional, predicate and temporal logic and apply resolution techniques. Also students should able to apply the concept of program verification in real-world scenarios.
BCA1102	Data Structure and Algorithm	• Analyze algorithms and algorithm correctness, searching and sorting techniques. • Describe stack, queue and linked list operation • Have knowledge of tree and graphs concepts
BCA1103	Business Accounting	• Define book-keeping and accounting. • Explain the differences between management and financial accounting. • Describe the main elements of financial accounting information – assets, liabilities, revenue and expenses.
BCA1104	Business Communication	• Student should be able to communicate effectively in real life situation.
BCA1105	Principles and Practices of Management and Organizational Behavior	• Describe various aspects of management. • Analyze the interactions between multiple aspects of management. • Justify the role of leadership qualities. • Analyze the role of planning and decision making.
BCA1201	Object Oriented Programming using C++	• To understand how C++ improves C with object-oriented features. • To learn design C++ classes for code reuse. • To understand the concept of data abstraction and encapsulation. • To learn design and implement generic classes with C++ templates. • To learn use exception handling in C++ programs.
BCA1202	Database Management System	• Create conceptual and logical database designs for a business information problem. • Analyze the core terms, concepts, and tools of relational database management system.
BCA1203	Software Engineering	• Apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design and deployment.
BCA1204	Technical Report Writing	• Produce a documentation plan, including estimates and schedules • Design and structure a document by analyzing the readership and selecting the right information
BCA1205	Business Commerce	• Gain an Understanding on how innovative use of the Business Commerce can help developing competitive advantages. • Develop an understanding on how internet can help business grow.

		• Gain an Understanding on the importance of security, privacy, and ethical issues as they relate to Business Commerce.
BCA2301	Java Programming	• Know the different basic concepts of Java programming language. • Use the Java programming language for various programming technologies • Develop software in the Java programming language.
BCA2302	Web Technologies	• Student should be able to design and implement dynamic websites with good aesthetic sense of designing and latest technical know-how's.
BCA2303	Python	• Design and program Python applications. • Use lists, tuples, and dictionaries in Python programs. • Use indexing and slicing to access data in Python programs. • Read and write files in Python.
BCA2304	Operating System	• 1. Learn the fundamentals of Operating Systems. • Know the functionality of Multiprocessor OS and Mobile OS. • Develop knowledge on distributed operating system concepts. • Learn Basic Administration of Linux.
BCA2305	Business statistics using R programming	• Get familiar with R software and learn basics of R with descriptive statistics. • Compute probabilities and fitting of probability distribution with R environment. • Appreciate and apply the R programming from a statistical perspective. • Understand the basics in R programming in terms of constructs, control statements, string functions.
BCA2401	Advanced Java Programming	• Learn to access database using Java Data Base Connectivity in Java programs. • Learn to use an Applet for internet programming. • Develop dynamic webpages using Servlets and JSP. • Develop client/server applications and TCP/IP socket programming • Develop and deploy web services using Java.
BCA2402	Advanced Web Technologies	• Students will be able to write a well formed/valid XML document. • Students will be able to connect program to a DBMS and perform insert, update and delete operations on DBMS table.
BCA2403	Mathematical foundation for Data Science	• Understand how to use limits to compute the derivatives of a function. • Utilize methods of Integration. 3. Utilize applications of matrices to solve industrial problem.
BCA2404	Software Testing	• Design Test Cases. • Check the software is built as per the requirement. • Check the Quality of the software.

BCA2405	Networking	• Understand various computer networks and technologies behind networks • Learn TCP/IP suite • Learn routing concept along with Routing protocols • Get knowledge of wireless networking concepts and protocols

B.Voc. & M.Voc. – Food Processing & Post Harvest Technology

Name of Course	Paper Code	Paper Name	Outcome
B.Voc.	FP-1	Principles of Food Preservation	• Students will have a thorough understanding of various food processing techniques. • The students will know the importance of various preservation techniques
B.Voc.	FP-2	Food Microbiology - I	• Students will have a thorough understanding of various factors responsible for food spoilage. • The students will know the specifications of various contamination sources and disease developed in certain processed products.
B.Voc.	FP-3	Food Science - I	• The student will be able To know about the basic cookery and the nutritive value of food products, To classify the products according to composition, • To explain role of each food group products
B.Voc.	FP-1.1	Principles of Food Preservation	• Students will have a thorough understanding of various food processing techniques. • The students will know the importance of various preservation techniques
B.Voc.	FP-1.2	Computer Application	• Students will be learn about computer application in better way.
B.Voc.	FP-1.3	Food Science-I	• The student will be able to: • To know about the basic cookery and the nutritive value of food products • To explain role of each food group products
B.Voc.	FP-4	Nutrition Science	Students will be able to: • Utilize knowledge from the physical and biological sciences as a basis for understanding the role of food and nutrients in health and disease processes. • Provide nutrition counseling and education to individuals, groups, and communities throughout the lifespan using a variety of communication strategies. • Evaluate nutrition information based on scientific reasoning for clinical, community, and food service application.
B.Voc.	FP-5	Food Microbiology-II	Students should be able to: • Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival. • Explain the effects of fermentation in food production and how it influences the microbiological quality and status of the food product. • Describe the characteristics of foodborne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.
B.Voc.	FP-6	Food Science - II	The student will be able to: • To know about the basic cookery and the nutritive value of food products • To classify the products according to properties

			• To explain role of each food group products
B.Voc.	FP-2.1	Nutrition Science	Students will be able to: • Utilize knowledge from the physical and biological sciences as a basis for understanding the role of food and nutrients in health and disease processes. Provide nutrition counseling and education to individuals, groups, and communities throughout the lifespan using a variety of communication strategies. • Evaluate nutrition information based on scientific reasoning for clinical, community, and food service application.
B.Voc.	FP-2.2	Food Microbiology-II	• Students will have a thorough understanding of various factors responsible for food spoilage. • The students will know the specifications of various contamination sources and disease developed in certain processed products.
B.Voc.	FP-2.3	Soft Skill Development	• Students will able to understand English grammar and their skills.
B.Voc.	FP-7	Processing of Fruits, Vegetables & Plantation Crops	• Students will have a thorough understanding of various food processing techniques. • The students will know the importance of various preservation techniques.
B.Voc.	FP-8	Processing of Cereals, Pulses & Oilseeds	• Students will have a thorough understanding the unit operations followed for raw form to an edible form of cereals and legumes • The students will know the importance of various methods to identify any disorder in 5 fresh commodities.
B.Voc.	FP-9	Food Chemistry-I	• Students will have a thorough understanding of structure and classification various components of food. • The students will know the process of complete digestion and assimilation of food components.
B.Voc.	FP-3.1	Processing of Fruits, Vegetables & Plantation crops	• Students will have a thorough understanding of various food processing techniques and their product.
B.Voc.	FP-3.2	Processing of Cereals, Pulses & Oilseeds	• Students will able to understand processing methods of cereals, pulses and oilseeds.
B.Voc.	FP-3.3	Food Chemistry-I	• Students will able to understand chemical methods which are used in food industry.
B.Voc.	FP-10	Bakery and Confectionery Technology	• Students will have a thorough understanding the processing and preservation of appetizers. • Students will have a thorough understanding on effect of blending and baking on final product of bakery. • The students will know the various extruded product development.
B.Voc.	FP-11	Food Chemistry-II	• Students will have a thorough understanding of water as a molecule and its importance in food. • The students will know about the major and minor minerals and its importance
B.Voc.	FP-12	Food Analytical Techniques	• Students will have a thorough understanding on the working principle and instrumentation of

			various instruments used in food analysis • The students will know the importance of various methods to identify any malfunction aspect of food.
B.Voc.	FP-4.1	Bakery and Confectionary Technology	• Students will able to understand all the Processing methods of bakery and confectionery products.
B.Voc.	FP-4.2	Food Chemistry-II	• Students will able to understand that all the chemical methods which are used in food industry.
B.Voc.	FP-4.3	Fundamentals in Bio-Statistics	• Students will able to learn about bio-statistical methods which are used in food industry.
B.Voc.	FP-13	Dairy Technology	• Give a comprehensive view of the composition of milk, its chemical, physical and organoleptic properties that can be applied in technological processing of milk. • Explain the production of milk and pre-treatment of milk. • Explain the dairy processing technologies. • Apply methods of analysis for dairy products and relate differences in composition and structure to differences in manufacturing processes. • Create a dairy product and evaluate relevant physical properties.
B.Voc.	FP-14	Food Quality Laws and Regulations	• Be able to critically evaluate the recent developments in the control of food safety. • Have an integrated view of the issues involved. • Be able to conduct risk assessments of food safety problems including genetic modification. • Demonstrate detailed knowledge of the requirements for compliance with national and international food safety legislation. • Know how to control and maintain a quality management system.
B.Voc.	FP-15	Principle of Post-Harvest Technology	• Understand technologies of post harvest technology and its role in providing better quality produce to the consumer. • Understand importance prevention of losses • Understand utilization of the produce and methods for shelf life extension • Understand cold chain management • Learn quality control and various standards required for domestic and export market
B.Voc.	FP-5.1	Dairy Technology	• Students will able to understand different processing methods of dairy products.
B.Voc.	FP-5.2	Entrepreneurship Development	• Students will learn about how to become a good entrepreneur and how to develop their entrepreneurship in better way.
B.Voc.	FP-16	Animal Product Technology	• Explain the composition, structure and function of meat, eggs, milk and fish; • Identify and describe the physical and biochemical changes occurring during the conversion of muscle to meat; • Describe and evaluate the implication of storage and processing operations on the quality of selected foods of animal origin;

			• Collect and interpret the data of experiments on the effect of processing conditions on quality parameters of animal food products; • Identify and explain the product composition, quality and production process of commercially available selected animal food products.
B.Voc.	FP-17	Food Safety, Hygiene and Sanitation	• Describe the role and function of packaging materials used for a range of consumer food needs and wants. • Design solutions to packaging problems. • Measure and evaluate the chemical, physical and mechanical properties of packages and packaging. 4. Explain knowledge of the legal, environmental, quality aspects associated with packaging materials and operations used in the food industry.
B.Voc.	FP-18	Packaging Technology	• Identify food safety hazards and their control • Identify & prevent potential sources of food contamination • Apply the principles of Hazard Analysis Critical Control Points (HACCP) • Recognize the principal legal responsibilities of food handlers regarding personal hygiene • Apply a range of food quality systems • Prepare a food safety plan
B.Voc.	FP-6.1	Animal Product Technology	• Estimation of moisture content of meat • Estimation of protein content of meat • To study shelf-life of eggs by different methods of preservation • Evaluation of eggs for quality parameters • Canning of meat/meat product formulation • Quality evaluation of fish/prawn • Fish product formulation/canning. • Estimation of moisture content of fish • Estimation of protein content of fish
B.Voc.	FP-6.2	Packaging Technology	• Identification and testing of packaging materials • Determination of wax from wax paper; • Testing of lacquered tin plate sheets; • Measurement of tin • Determination of equilibrium moisture content; • Grading of glass bottles for alkalinity; • Determination of water vapour transmission rate of packaging material; • To perform vacuum packaging of food sample and carry out its storage study; • Testing the compression strength of the boxes; • Packaging the food material in seal and shrink packaging machine and study its shelf life;

			• Testing the strength of glass containers by thermal shock test; Testing the strength of filled pouches by drop tester. • Preparation of album of different types of packaging. • Visit to industry • Preparation of visit report & presentation
M.Voc.	FPT-1	Food Microbiology	Students will able to, • Explain pathogens and spoilage microorganisms in foods and the conditions under which they will grow, conditions under which the important pathogens are commonly inactivated, killed or made harmless in food describe the processes, contamination and advantages of microbial involvement • Explain the theoretical basis of the tools, technologies and methods common to microbiology
M.Voc.	FPT-2	Food Chemistry and Analysis	• Understand the properties of food components • Develop an understanding of the principles of interactions of food molecules. • Able to learn about analytical techniques and its importance in food industry • Knowledge of proper procedures and methodologies in analytical.
M.Voc.	FPT-3	Nutrition Science	• Understand the basic nutrients of food products. • Able to learn about food group & various body processes.
M.Voc.	FPT- 1.1	Food Microbiology	• Students will able to understand different techniques and micro-organisms present in the food products.
M.Voc.	FPT- 1.2	Food Chemistry and Analysis	• Students will able to learn about analytical techniques
M.Voc.	FPT- 1.3	Bakery and Confectionery Technology	• Students will able to understand different bakery and confectionery methods and products.
M.Voc.	FPT- 4	Beverage and Snack Food Technology	After learning this subject • Students will be able to know different types of beverages found in Indian as well as international market. • Students will have better ideas regarding alcoholic and non-alcoholic beverages with water industry. • Students will have thorough knowledge of different types of cereal based snacks food items available in market. • Students will get brief knowledge of fruits and vegetables based snacks
M.Voc.	FPT- 5	Food Additives, Contaminants and Toxicology	Students will be, • Able to get knowledge about different of food additives & their role in food processing industry. • Understand toxins, contaminants & their hazard to our body.
M.Voc.	FPT- 6	Advances in Food	• Students will be able to understand major food preservation and Packaging techniques, and

		processing & Packaging	underlying principles. • Students will be able to determine suitable methods of processing and Packaging techniques for a chosen food • Students will be able to understand Novel food processing methods like thermal processing, cold preservation etc. • Students will be able to understand operations involved in packaging material manufacturing • Students will be able to understand major packaging material and methods used in food packaging
M.Voc.	FPT- 2.1	Beverage and Snack Food Technology	• Students will able to understand different beverage and snack product methods.
M.Voc.	FPT- 2.2	Processing of Fruits and Vegetable	• Students will able to understand processing of different fruits and vegetables methods.
M.Voc.	FPT- 2.3	Advances in Food Processing & Packaging	• Students will be able to understand major packaging material and methods used in food packaging
M.Voc.	FPT- 7	Elective-1: Dairy Processing Technology ,	• Students will understand the concept of processing of milk and milk products. • The students will able to explain the basics behind milk process technology that would comparatively help to get the knowledge of technical views regarding industrial aspect.
M.Voc.	FPT- 7	Elective-2: Meat Processing Technology	• Learn the structure, composition and nutritive value of meat • Will be able to identify different types and cuts used for slaughtering • Able to identify the changes that occurs during processing • Will learn about factors determining meat quality
M.Voc.	FPT- 8	Post-Harvest Technology	• Students will acknowledge the steps and techniques involved in post -harvest practices. • The students will able to explain processing and packaging operations.
M.Voc.	FPT-9	Food Safety and Quality Management	• Students will understand the concept of quality management in food processing. • The students will able to explain the degree of standard of any processed product
M.Voc.	FPT- 3.1	Dairy Processing Technology	• Students will understand the concept of processing of milk and milk products. • The students will able to explain the basics behind milk process technology that would comparatively help to get the knowledge of technical views regarding industrial aspect.
M.Voc.	FPT- 3.2	Post-Harvest Technology	• Students will able to understand the different post harvest methods which are used before and after harvesting.
M.Voc.	FPT- 3.3	Statistics and Research Methodology	• Students will understand the statistical error in the research and to overcome the research problems. • The students will acknowledge the methods of research as well as Statistical background of any research.
M.Voc.	FPT- 3.4	Industrial training/	• Students will able to learn about industrial or project working and changes which are occur in

		Dissertation part-I	their innovation.
M.Voc.	FPT-4.1	Seminar based on case study	• Students will able to understand overall study of industrial work and methods.
M.Voc.	FPT-4.2	Industrial Visit	• Students will able to understand industrial working of visited industry.
M.Voc.	FPT-4.3	Industrial training/Dissertation part-2	• Students will able to learn about industrial or project working and changes which are occur in their innovation.

B.Voc. & M.Voc. – Journalism and Mass Communication

Name of Course	Paper Code	Paper Name	Outcome
B.Voc.	JM 101	Introduction to Mass Communication	• Students would be able to introduce themselves to the theories of Communication. • Students would be able to inculcate the knowledge of Communication models. • Students would be able to develop the knowledge of basic elements of Communication.
B.Voc.	JM 102	Introduction to Journalism	• Students would be able to understand the basics of journalism. • Students would be able to inculcate the knowledge of student elements of journalism. • Students would be able to develop the knowledge of skills of journalism.
B.Voc.	JM 103	Current Affairs- World, India, Maharashtra	• Students would be able to impart the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about socio –economic issues. • Students would be able to develop the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about political issues • Students would be able to inculcate the extensive knowledge about general knowledge, general awareness and contemporary activities at local, regional, national and international level about educational and cultural issues
B.Voc.	JM 104	Language skills- Marathi	• Students would be able to create linguistic skills. • Students would be able to impart knowledge about advanced vocabulary for effective • communication. • Students would be able to inculcate the knowledge of compositional and comprehension Skills
B.Voc.	JM 105	Computer Applications for Media	• Students will learn about computer • Student will learn PowerPoint presentation and its application • student will learn about adobe Photoshop
B.Voc.	JM 106	Basics of photography	• Students would be able to develop the knowledge of photography. • Learner would learn the concepts and importance of photography. • Learner would know different branches of photography and may be self-employed
B.Voc.	JM 201	News reporting and Editing-I	• Students would be able to understand the basics of reporting. • Students would able to understand the working pattern of various print media platform. • Students would be able to create understanding of various print media content.
B.Voc.	JM 202	Writing for Media-I(Print)	• Students know about the basics of news writing. • Students will be having the knowledge of the theory, methods, and practice of gathering

			information and writing news. • Students would be able to understand different writing techniques.
B.Voc.	JM 203	Indian Constitution	• Student would be able to apply knowledge of our Indian Constitution in media. • To familiarize students will be aware about the fundamental rights and duties. • Student will be understanding about legal aspects of the media and its values.
B.Voc.	JM 204	Language skills- English	• Students would be able to create linguistic skills. • Students would be able to impart knowledge about advanced vocabulary for effective communication. • Students would be able to understand the societal cultural perspectives.
B.Voc.	JM 205	Feature Writing	• Students would be able to understand feature writing techniques • Students will be having the knowledge of news and background. • Students would be able to write feature article on given topic
B.Voc.	JM 206	Photojournalism	• Learner would learn the concepts and importance of photography. • Learner would be able to understand photo coverage and photojournalism. • Learner would be to ready to join any media organization as photojournalist.
B.Voc.	JM 301	News Reporting and Editing-II	• Students would be able to understand the various beat reporting. • Students would be able to develop the general understanding of art culture and sports reporting. • Students would be able to know about crime reporting.
B.Voc.	JM 302	Writing for Media-II	• Students will able to familiarize the students with the basic techniques of Writing for different platforms. • Students will be having the knowledge of script writing. • Students will be having the knowledge of online journalism
B.Voc.	JM 303	Introduction to Radio	• Students will be able to understand the working pattern of Radio. • Students will able to familiarize the students with the basic techniques of radio. • Students will be able to understand content creation for radio.
B.Voc.	JM 304	Editing Skills	• Students would be able to familiarize themselves with the basics of editing. • Students would be able to understand the process of editing for various platforms. • Students would be able to create understanding of specialized reporting
B.Voc.	JM 305	Radio Production	• Students will be able to cover events using mobile phones and right radio news stories • Students will be able to interview, make radio promos and jingles • Students will be able to apply radio production techniques.
B.Voc.	JM 306	Experimental Journal	• Students would be able to design newspaper • Student will understand the aesthetics of newspaper designing

			• Students will acquire skills and techniques of page making
B.Voc.	JM 401	Introduction to Television	• Students will understand new trends in television journalism. • Students will be able to write scripts of television news stories, special stories and on the spot reporting • Students will be able to cover events and news-based stories using mobile phones, video cameras.
B.Voc.	JM 402	India After Independence	• Students will be able to develop an ability to convey their historical knowledge. • Students will learn about the changes happened in the nation after Independence. • Students will gain knowledge on various historical aspects related to media after Independence in India.
B.Voc.	JM 403	Introductions to Economics	• Students will be able to identify the economic issues and write articles concerning the problems. • Students can analyse the rural economy, Budget state and central and manufacturing industries • Students will be competent to analyse issues of poverty, social justice, SDGs (Sustainable Development Goals) of United Nations
B.Voc.	JM 404	Television Production	• Students will acquire skills and techniques of television media production • Students would gain practical knowledge of Content creation for television • Students will be able to do the editing both offline and online programme of television • with using the software
B.Voc.	JM 405	Film Appreciation	• Describe basic concepts related to cinema. Show film's relationship to each of the arts: music, dance, literature, theatre, architecture, photography and painting. • Discuss relationship between film and 20th-century art movements: impressionism, cubism, surrealism. Explain vocabulary of film, tools of expression and film formats. • Classify different film styles and genres like action, adventure, comedy, drama, epic/historical, horror, Sci-fi, war. • Analyse recurrent themes, images, and narrative structures. Identify other formats i.e. short films: fiction & nonfiction, promotional, propaganda, corporate, educational, advertising films. • Appraise development of film in Europe, US and India. Important directors and their contribution to world cinema, film companies and film. Review Development and contribution of important Film Makers (Global/Indian).
B.Voc.	JM 406	Basics of Video production	• Learner will gain basic understanding of communication technology. • Learner will have hands on experience on Audio- video editing techniques. • Learner will be able to create content on various platforms.
B.Voc.	JM 501	Introduction To Digital	• Students would gain understanding of the concepts of digital and social media.

		Media	• Students would be able to utilize digital social media tools for different developmental activities. • Students would be able to gain understanding of cyber ethics. • Students will comprehend the functionalities of digital media.
B.Voc.	JM 502	Introduction to Media Research	• Students would learn the definitions and basic concepts of research, communication research, media research and social research. • Students would know the difference between communication research, media research and social research. • Students would gain knowledge about the need, role importance, functions and ethics of research.
B.Voc.	JM 503	Modern World Scenario	• Students would be able to introduce themselves to the theories of Communication. • Students would be able to inculcate the knowledge of Communication models. • Students would be able to develop the knowledge of basic elements of Communication.
B.Voc.	JM 504	New Media	• Students will comprehend the functionalities of digital Media. • Students would be able to utilize digital tools for different developmental activities. • Students would able to know about the risks and challenges of digital media world • Students will able to create content for digital platforms.
B.Voc.	JM 601	Basics of Advertising	• Students would gain knowledge to accomplish Audio Visual Production Project • Students shall apply skills learnt in the course which are relevant to the project • Student would able to Design and complete the project. Specify type of the project, skills applied and build an understanding about relevance of the project.
B.Voc.	JM 602	Public Relations	• Student would able to apply theoretical knowledge in Industry • Students will get exposure of industrial hands on training • Students will get knowledge of stature of industry
B.Voc.	JM 603	Media Management & Low	• Students would learn development of advertising and basic concepts. • Students would be able to know about role and importance of advertising in media. • Learner will have the knowledge of self-employment.
B.Voc.	JM 604	Design & Analysis of Advertise	• Students would gain knowledge about the tools of public relations. • Students would learn the basics of public relations writings. • Students would gain knowledge about the basic ethics and laws of public relations.
B.Voc.	JM 605	Dissertation /In Depth Reporting (IDR)	• Students shall understand media proliferation in India. • Students shall get aware to management values and process. • Students shall have an overview of recent changes and future challenges of media regulation • Students shall understand media ownership pattern. 5. Students shall know Liberalization

			globalization have impacted the current media scenario.
M.Voc.	MS 101	Introduction to Media Studies	• Students would be able to create advertisement for various media. • Students would know about advertising agencies. • Learner would know about the advertising industry and its functioning
M.Voc.	MS 102	Introduction to Journalism	• Students would learn the definitions and basic concepts of research, communication research, media research and social research. • Students would know the difference between communication research, media research and social research. • Students would gain knowledge about the need, role importance, functions and ethics of research.
M.Voc.	MS 103	Introduction to Video Production	• Students can apply theoretical knowledge in Industry and gain experience. • Students will get exposure to various industrial hands through training. • Students will get knowledge of stature of industry.
M.Voc.	MS 104	Writing for Media	• Students would be able to introduce themselves to the theories of Media Studies. • Students would be able to inculcate the knowledge of Communication models. • Students would be able to understand the interrelation between society and communication. • Students would be gaining knowledge on various media perspectives.
M.Voc.	MS 105	Photography	• Students would be able to acquaint them with important aspects of the process of journalism. • Students would be able to develop the knowledge of skills of journalism. • Students would be able to enhance understanding of the technical terms and jargons of journalism.
M.Voc.	MS 106	Introduction to Media Software	• earner will gain understanding process of communication through video technology. • Learner will have hands on experience on Audio- video Camera and editing techniques. • Learner will be able to create content on various platforms.
M.Voc.	MS 107	Camera Techniques- I	• Recall and cite the specific facts, basic concepts and principles of writing skills. • Differentiate and compare between diverse types of writing. • Discuss advantages and limitations of news writing, feature writing, article writing, and captions writing. • Create well written content for applications, blogs, emails, story movie review, book review and summary. • Demonstrate an ability to write content on a specific type. Modify same content to suit various types • Evaluate skills and style of the content of any type. Determine reasoning for a write-up.
M.Voc.	MS 201	Visual Communication	• Remember and cite the basic concepts and principles of Photography. Identify the scope and functioning of camera.

			• Articulate the process of photography effects of aperture, shutter speed, types of Photo (Formal, Informal), elements concerning Silhouette and Architectural photography • Apply Perspectives (Linear, Arial). Illustrate ability to take photographs of Fruits, Earthenware, Flowers, Crockery, Metal ware, Glassware, Food, Jewellery etc. • Appraise the importance of Silhouette, Portrait, Outdoor portrait with reflector. Compare various types of photography and assess their significance.
M.Voc.	MS 202	Media, Society and Culture	• Students will learn about media software • Students will be able to understand Software and Operating System • Students will have the knowledge of photoshop • Students will learn about basic photo editing
M.Voc.	MS 203	Media Research Methods	• Understand and discuss relationship between lighting and camera • student will be able to Carry out basic exercises related to Video Camera. • student can handle studio lighting in for indoor shooting. • student would be able to Analyse types of camera shots and angles. • Student can conduct video shooting exercises related to different environments.
M.Voc.	MS 204	Camera Techniques- II	• Describe different types of communication and identify basic concepts, elements, scope of visual communication. • Articulate classification of shots. Discuss the history of visual communication and articulate the concepts of visual literacy. • Analyse colour theory. Distinguish between motion and static visual communication and explain the impact of visual communication on society. • Assess influence and significance of Visual aids and advance techniques to separate shots. • Specify the importance of the models of visual communication. Explain advantages and the overall role played by visual communication today.
M.Voc.	MS 205	Experimental Journal	• Discuss relationship between society and media, media norms and social institutions. Classify media according to types. Give examples of media content of various types. • Examine effects of media on children, women, and youth. Outline different stereotypes depicted by media. • Analyse role of media in bringing social and economic development. Explain significance of media in the process of rural/community development. • Appraise culture as a distinguishing factor of any society. Assess influence of media in projecting culture and discuss type of culture. • Develop an understanding about the need of media literacy. Formulate media texts
M.Voc.	MS 206	Script Writing	• Describe basic concepts related to media research. Understand scope and nature of research. State components related to scientific enquiry.

			• Classify research according to types. Discuss methods of research. Explain key differences between qualitative and quantitative approach. • Examine case studies which followed different research approaches. Discuss importance of literature review and data collection while pursuing research. • Analyse key elements associated with a research proposal. Understand care needs to be taken while drafting a research proposal. • Appraise importance and utility of different approaches to data analysis. Discuss the need of research in media.
M.Voc.	MS 207	Anchoring skills and Voice Modulation	• Student would able to evaluate importance of skills required for advanced camera techniques. • Student can handle the professional camera applications. • Design and perform specific tasks related to advanced cinematography
M.Voc.	MS 301A	Script Writing and Direction	• Students would gain the knowledge of practical content creation for print media. • Students would be able to utilize knowledge of news writing and editing. • Students would be able to gain understanding page designing. • Students will create experimental Journal in campus.
M.Voc.	MS 302A	Sound and Post-production	• Recall basic concepts related to script writing. Describe norms and practices of Script Writing. • Discuss fundamental principles of storytelling. Explain principles of action and dialogue writing. Give examples of Script formats and styles. • Classify elements of a script. Generalize importance of theme, plot, character profiles, scene design and dialogue in a script. • Analyse the relationship between characters and plots. Explain basics of dramaturgy including nature of conflict, escalating confrontation, resolution delivering dramatic satisfaction
M.Voc.	MS 303A	Film Appreciation	• Describe mechanism of human voice and identify its types. • Articulate 5Ps of Human Voice and discuss relationship between Breathing & Voice. • Carry out breathing while controlling air flow. Experiment with various breathing exercises. • Design Voice-Over project using techniques of voice recording and editing.
M.Voc.	MS 304A	Group Project	• Students would gain knowledge to write for audio- visual production • Students would gain knowledge to direct for audio- visual production • Students shall apply skills learnt in the course for creative writing and production
M.Voc.	MS 305A	Video Editing	• Students would gain knowledge of technical aspects of sound recording • Student would understand the use of sound in audio visual content • Students shall apply skills in post-production of visual production
M.Voc.	MS 306A	Lighting Techniques	• Describe basic concepts related to cinema. Show film's relationship to each of the arts: music, dance, literature, theatre, architecture, photography and painting. • Discuss relationship between film and 20th-century art movements: impressionism, cubism,

			surrealism. Explain vocabulary of film, tools of expression and film formats. • Classify different film styles and genres like action, adventure, comedy, drama, epic/historical, horror, Sci-fi, war. • Analyse recurrent themes, images, and narrative structures. Identify other formats i.e. short films: fiction & nonfiction, promotional, propaganda, corporate, educational, advertising films.
M.Voc.	MS 301B	Digital Journalism	• Students would gain knowledge to accomplish Audio Visual Production Project • Students shall apply skills learnt in the course which are relevant to the project • Student would able to Design and complete the project. Specify type of the project, skills applied and build an understanding about relevance of the project.
M.Voc.	MS 302B	Social Media Marketing	• Identify basic concepts related to video editing. State key components related to video editing. • Discuss advantages offered by Editing Software (Premier Pro CC). Use this software. • Execute fiction video editing. • Analyse and classify skills needed for video editing. Discuss general nature of video editing. • Appraise the importance of video editing for Dramatic Sequence, Action Sequence, Documentary News Editing & Ad Editing
M.Voc.	MS 303B	Advertising	• Students would learn to use lighting for indoor production. • Student can handle the professional lighting project • Students would gain knowledge about outdoor lighting techniques
M.Voc.	MS 304B	Group Project	• Students would able to understand the working pattern of various Digital platform. • Students would be able to familiarize themselves with the basics of writing of digital media. • Students would be able to create understanding of various digital Journalism • Students will be having the knowledge of online journalism.
M.Voc.	MS 305B	Broadcast journalism	• Learner would learn the concepts and importance of Social Media Marketing. • Learner would be able to understand concept of marketing. • Learner would be to ready to join any media organization as Social Media Marketing executive.
M.Voc.	MS 306B	Digital Content Development	• Students would learn development of advertising and basic concepts. • Students would be able to know about role and importance of advertising in media. • Learner will have the knowledge of self-employment. • Students would know about advertising agencies. • Learner would know about the advertising industry and its functioning.
M.Voc.	MS 401A	Industrial Internship	• Students would gain knowledge to accomplish journalism contents digitally. • Students shall apply skills learnt in the course which are relevant to the project • Student would able to Design and complete the project. Specify type of the project, skills

			applied and build an understanding about relevance of the project.
M.Voc.	MS 402A	Study Visits and Report	• Students will be able to understand the working pattern of electronic media platform. • Students will able to familiarize the students with the basic techniques of broadcasting. • Students will be able to understand electronic media content creation. • Students will be having the knowledge of script writing.
M.Voc.	MS 403A	Video Production Project	• Learner will gain basic understanding of content development. • Learner will have the basic knowledge of various audio editing tools. • Learner will be able to create content on digital platforms. • Learner will be able to communicate on social media effectively.
M.Voc.	MS 401B	Industrial Internship	• Students can apply theoretical knowledge in Industry and gain experience. • Students will get exposure to various industrial hands through training. • Students will get knowledge of stature of industry.
M.Voc.	MS 402B	Study Visits and Report	• Students are taken to various production houses where they can understand the working of media industry. • Students will acquire knowledge on the teamwork and on-going processes of media houses. • Students can also gain knowledge on how film cities are utilized for production set works.
M.Voc.	MS 403B	Research Project/In-depth Reporting	• Students will acquire skills and techniques of video production. • Students will be able to implement the learned topics of script writing to actual shoot for the project. • Students will understand the video content creation process of different genres.

B.Voc. – Retail Management

Paper Code	Paper Name	Outcome
RM 1101	Business Communication Skills-I	• Acquaint students of business communication.
RM 1102	Principles of Management-I	• Acquaint students of basics of principles of management in any organization
RM 1103	Managerial Economics	• Get knowledge of market and effects of demand and supply of market.
RM 1104	Introduction to Retailing	• Understand retail organization in India and carers in retail.
RM 1105	Retail Sales Management	• Get knowledge of retail sales management & CRM.
RM 1106	Principles of Consumer Behavior-I	• Handled the customer and understand the needs and wants of customers.
RM 1201	Business Communication Skills-II	• Acquaint students of communication strategies and business etiquette.
RM 1202	Principles of Management-II	• Get the perfect knowledge of organization system
RM 1203	Principles of Consumer Behavior-II	• Acquaint students of basics of principles of management in any organization.
RM 1204	Life Skills and Computer Concepts	• Acquaint students of basics of computer and how to implement in retail management.
RM 1205	Retail Management-I	• Get practical knowledge to visit various malls
RM 1206	Retail Sales Management-II	• Acquaint students of sales management and service concept
RM 1301	Business Accounting	• Acquaint students of business accounting.
RM 1302	Personality Development & Team Building	• Understand the concept of Personality Development and Team Building in any organization
RM 1303	Principles of Marketing	• Get knowledge of market and marketing structure and also helps to know, how to handle the situations in the market.
RM 1304	Internship	• Understand retail organization in the surrounding area.
RM 1305	Retail Store Operations-I	• Get knowledge of retail store operations &managing store performance
RM 1306	Store Layout and Design	• Know how to create the attractive store layout to attract the customers.
RM 1401	Principles of Finance	• Acquaint students of financial planning, financial sources, venture capital nature etc.
RM 1402	Basics of Cost Accounting	• Get the knowledge of concept of cost accounting in detail.
RM 1403	Negotiation Skills	• Acquaint students of basics of principles of negotiation skills.
RM 1404	Internship	• Acquaint students of planning and its use in business.
RM 1405	Retail Store Operations-II	• Get practical knowledge to visit various malls
RM 1406	Service Marketing	• Acquaint students of sales management and service concept
RM 501	Marketing Research	• This course is aimed various concepts & terms associated with scientific business research. • This course is explaining the terms and concepts used in all aspects of scientific business research.
RM 502	Bank Finance	• On successful completion of the course the learner will be able to explain the Regulatory Framework in the Indian Banking system. • On successful completion of the course the learner will be able to discuss the various laws related

		to banking.
RM 503	Human Resource Management for Retail Management	• This course is aimed at providing comprehensive knowledge of Human Resources Management • This course will provide knowledge of all the functions of HRM & the role of Human Resource Function in Retail Sector.
RM 505	Material and Logistics Management	• This paper will be useful in providing students with a comprehensive understanding of the theoretical and applied aspects of logistics management. • Students will be enabled to effectively monitor and manage logistics.
RM 506	Retail Store Operation-III	• This course provides practical experience and exposure to students. • This course will make students understand various aspects of retail store operation. This course get the student acquainted with the knowledge of retail operations performed in a retail organization.
RM 601	Marketing Management	• This course is aimed at providing comprehensive knowledge of Marketing Management • This course explains the various concepts, principles, frameworks and terms related to the function and role of marketing.
RM 602	Retail Financial Services	• This paper will be useful in providing students with a comprehensive understanding of the theoretical and applied aspects financial services. • On successful completion of the course the learner will be able discuss mutual fund, insurance services & credit cards
RM 603	Entrepreneurship Development	• This course will provide a foundation for Entrepreneurship Development • This course will make the students to create a business plan that captures entrepreneurs and variety of entrepreneur motivations, entrepreneur culture and sectoral opportunities and financing options
RM 605	E-Commerce and Digital Marketing	• On successful completion of the course the learner will be able to discuss the various applications of Digital Business in the present day world. • On successful completion of the course the learner will be able to describe the conceptual framework of e commerce, mobile commerce and social commerce.
RM 606	Retail Store Operation-IV	• This course provides practical experience and exposure to students. • This course will make students understand various aspects of retail store operation. • This course get the student acquainted with the knowledge of retail operations performed in a retail organization.

B.Voc. – Dairy Technology

Paper Code	Paper Name	Course/Paper Outcome
BDT-101	Dairy Development	• Students will understand the fundamentals of the working of a dairy industry • They will learn about history of dairy sector in India. • They will learn about different schemes run by Indian Government. • They will be able to demonstrate clean milk production. • They will acquaint with development of a dairy plant. • They will learn about animal husbandry practices and Health care.
BDT-102	Dairy Farm Management	• Students will have a better understanding of cattle breeds. • They will be able to demonstrate different milking techniques. • They will be able to define feed , fodder management & its cultivation. • They will understand life cycle of dairy animals. • They will understand different types of diseases in dairy animals. • They can manage a dairy farm as a entrepreneur. • They will get acquainted with the skills for Dairy Farm Management.
BDT-103	Dairy Chemistry	• Students will understand the chemical make-up of milk. • They will understand the different aspects of clean milk production, • They will be able to asses composition of milk. • They will acquaint with the properties of milk. • They can explain the crucial parameters of the milk.
BDT-1.1	Dairy Farm Management	• Students will be able to examine quality of milk. • They will lean about different adulterants. • They will be able to demonstrate adulteration tests for the milk. • They will be able to apply hygienic practices in the dairy farm. • They will know about anatomy of milking animals.
BDT-1.2	Dairy Chemistry	• Students will get vast knowledge of chemicals used for milk analysis. • They will understand standard values of quality parameters. • They will be able to examine the quality of the milk. • They will get exposure to the instruments of analysis. • They will understand the functions of all the chemicals used for the analysis.
BDT-1.3	Soft Skill Development	• Students will achieve stage daring. • They will be able to communicate fluently. • They will get acquainted with the professional format of conversation. • They will be able to create an impact with the verbal communication.

		• They will understand the difference between formal and informal communication.
BDT-201	Food Preservation Technology	• Students will gather information on preservation of food. • They will understand about different processes of food preservation. • They will be able to demonstrate pre-preparation actions. • They will be able to choose suitable preservation technique. • They will be able to improve the shelf life of the food.
BDT-202	Milk Processing Technology	• Students will get acquainted with the different milk processes. • They will learn about different types of milk. • They will learn about reception & storage of milk. • They will acquire information on fundamentals of milk processing. • They will be able to solve processing related errors. • They will learn about different methods of pasteurizing milk.
BDT-203	Dairy Microbiology	• Students will learn about microbial make-up of milk. • They will understand the microorganisms of commercial importance. • They will get acquainted with the different methods of microbial analysis. • They will know the overall effect of microbial action on milk. • They will know the types of organisms, beneficial & harmful microorganisms. • They will learn about different staining methods which are used in microbiology. • They will be able to demonstrate different isolation of pure culture techniques.
BDT-2.1	Food Preservation Technology	• Students will be able to apply different preservation techniques to the food. • They will understand the processing of food through various processes. • They will learn about effect of different physical parameters on food. • They will learn about the variety of preservatives that are used commercially. • They will be able to improve quality of food.
BDT-2.2	Dairy Microbiology	• Students will learn about microbiology in milk • They will understand the microorganisms of commercial importance & its use for industrial production . • They will get acquainted with the different methods of microbial analysis & microbial sampling • They will know the overall effect of microbial action on milk as well as effect on environmental factors on microbial growth. • They will know the types of organisms, beneficial & harmful microorganisms. • They will learn about different staining methods which is used in microbiology. • They will be able to demonstrate different isolation of pure culture techniques. • They will learn about isolation of pathogenic microorganisms from any food sample. • They will learn about nutrient requirement of microorganisms.
BDT-2.3	Computer Application	• Students will get exposed to various aspects of Information technology. • They will learn about different applications of storing the data.

		• They will be able to demonstrate different programmes. • They will get acquainted with electronic communication. • They will get complete knowledge of accessing MS excel.
BDT-301	Dairy Processing Equipments	• Students will get exposure to various equipments used for milk processing. • They will achieve the knowledge about different pipes and pumps used in the industry. • They will be able to assemble different parts of equipments. • They will be able to understand the working principle of machinery which is used in dairy industry. • They will be able to operate the equipments & maintenance of equipments with technical knowledge.
BDT-302	Fermented Milk Products	• Students will get an exposure towards fermented class of milk products. • They will know the importance of fermented milk products. • They will acquire information on fermentation process and products. • They will be able to understand processing of cheese along with some other fermented products. • They will be able to understand the function of microorganisms in Dairy products.
BDT-303	Nutrition Science	• Students will understand the nutritional make-up of milk. • They will get the knowledge about all the nutrients. • They will have an elaborate idea of all the nutrients present in the milk. • They will understand the function of nutrients in the production of milk products. • They will acquire the knowledge on effect of nutrients on human body.
BDT-3.1	Dairy Processing Equipments	• Students will understand the working principle of various equipments. • They will get to know about different parts of the equipment. • They will be exposed to operations of different equipments. • Different pumps and pipes will be introduced to them. • Production of different products will be understood through the working of equipments.
BDT-3.2	Fermented Milk Products	• Students will get an exposure towards fermented class of milk products. • They will know the importance of fermented milk products. • They will acquire information on fermentation process and products. • They will be able to understand processing of cheese along with some other fermented products.
BDT-3.3	Nutrition Science	• Students will understand the nutritional make-up of milk. • They will get the knowledge about all the nutrients. • They will have an elaborate idea of all the nutrients present in the milk. • They will understand the function of nutrients in the production of milk products. • They will acquire the knowledge on effect of nutrients on human body.
BDT-401	Dairy Engineering	• Students will be able to explore engineering section of the processing. • They will be able to differentiate between alternate and direct current. • They will get acquainted with the knowledge of refrigeration cycle. • They will receive vast information on characteristics of refrigerant.

		• They will get in-depth knowledge of energy flow in an industry.
BDT-402	Traditional Indian Dairy Products	• Students will get an exposure towards traditional Indian dairy products. • They will know the importance of traditional Indian dairy products. • They will acquire information on process of product manufacturing and its nutritional value • They will be able to understand processing of heat desiccated, heat and acid coagulated, fat rich products along with judging and grading of indigenous milk products.
BDT-403	Food Safety, Hygiene & Sanitation	• Students will know about the importance of food safety. • They will get to know about the hazards of consumption of unsafe food. • They will know about the different pathogens that can enter the body through contaminated food. • They will achieve information about common food borne illnesses and their treatments. • They will understand the packaging methods that can prevent food contamination.
BDT-4.1	Dairy Engineering	• Students will be able to explore engineering section of the processing. • They will be able to differentiate between alternate and direct current. • They will get acquainted with the knowledge of refrigeration cycle. • They will receive vast information on characteristics of refrigerant. • They will get in-depth knowledge of energy flow in an industry.
BDT-4.2	Traditional Indian Dairy Products	• Students will get an exposure towards traditional Indian dairy products. • They will know the importance of Indian dairy products & its nutrition value • They will acquire information on manufacturing process and products on small as well as industrial scale. • They will be able to understand processing of khoa and khoa based products, paneer and chhana based products.
BDT-4.3	Food Safety, Hygiene &Sanitation	• Students will know about the importance of food safety. • They will get to know about the hazards of consumption of unsafe food. • They will know about the different pathogens that can enter the body through contaminated food. • They will achieve information about common food borne illnesses and their treatments. • They will understand the packaging methods that can prevent food contamination.
BDT-501	Dairy Dessert & Dried Products	• Students will understand the importance of dried milk products in the economy. • They will understand the process of production of dried milk. • They will understand the difference between Ice-cream and frozen dairy dessert. • They will know the thorough working of spray and roller dryer. • They will get information about the by-products of dairy industry.
BDT-502	Packaging Technology	• Students will get an exposure towards packaging material used for dairy products • They will know the importance of packaging material • They will acquire information on types of packaging material, packaging machines used in food industry. • They will understand the different forms of packaging used in food industry.
BDT-503	Quality Management	• Students will have an exposure towards the quality parameters of milk and milk products.

		• They will know the difference between quality assurance and quality control. • They will get familiar with the different govt. rules and regulations. • They will have an in-depth knowledge of Waste management in dairy industries. • They will be able to create a flow of SOP for a specific operation.
BDT-5.1	Dairy Dessert & Dried Products	• Students will understand the importance of dried milk products in the economy. • They will understand the process of production of dried milk. • They will understand the difference between Ice-cream and frozen dairy dessert. • They will know the thorough working of spray and roller dryer. • They will get information about the by-products of dairy industry.
BDT-5.2	Packaging Technology	• Students will get an exposure towards packaging material used for dairy products • They will know the identification and testing of packaging material • They will acquire information about packaging machines & its working • They will understand the different packaging systems used in food industry.
BDT-5.3	Quality Management	• Students will have an exposure towards the quality parameters of milk and milk products. • They will know the difference between quality assurance and quality control. • They will get familiar with the different govt. rules and regulations. • They will have an in-depth knowledge of Waste management in dairy industries. • They will be able to create a flow of SOP for a specific operation.
BDT-601	Entrepreneurship Development	• Students will get some basic guidance for their start-up. • They will be aware of all the institutes working for entrepreneurial support. • They will be able to structure their project reports. • They will understand the qualities and traits needed for entrepreneurship. • They will be educated towards laws and regulations for the industries.
BDT-602	Dairy Plant Management	• They will learn key skills in managing the efficiency and man power of the dairy plant • They will learn principles of dairy plant management. • They will understand plant operations, dairy plant design and layout in detail.
BDT-603	Food Laws and Regulations	• They will know about the basics of food laws that are being imposed on food industries. • They will be able to demonstrate HACCP. • They will know the importance of testing and quality assurance. • They will have clarity of concepts of BOD and COD. • They will know about the environmental responsibility that is there on food industries.
BDT-6.1	In-plant training/Project	• Students will get exposed to the aspects of dairy management. • They will understand the practical working of a dairy industry. • They can illustrate important factors of dairy development. • They will be able to demonstrate effective management. • They will lean about professional protocols of industrial work.

B.Voc. – E-Commerce & Digital Marketing

Paper Code	Paper Name	Course/Paper Outcome
ECDM101	Basics of E-Commerce	• Identify and discuss management issues underlying e-Commerce issues including organizational structure, strategic planning, and goal setting, and corporate social responsibility, international arena, changing market intermediaries, resource allocation and customer service.
ECDM102	Fundamentals of Information Technology	• Apply skills and concepts for basic use of computer hardware, software, networks, and the Internet in the workplace and in future coursework as identified by the internationally accepted Internet and Computing Core (IC3) standards. • Using computers at user level, including operative systems and programming environments.
ECDM103	Business Communication I	• Define the knowledge, skills, and abilities students are expected to demonstrate upon completion of an academic program. These learning outcomes are regularly assessed to determine student learning and to evaluate overall program effectiveness.
ECDM104	Discussion & Case Study on E-Commerce	• Understand the basic concepts and technologies used in the field of management information systems; • Have the knowledge of the different types of management information systems; • Understand the processes of developing and implementing information systems; • Be aware of the ethical, social, and security issues of information systems;
ECDM105	Programming Lab based on I.T(MS-Office)	• Recognize when to use each of the Microsoft Office programs to create professional and academic documents. • Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.
ECDM106	Programming Lab of HTML and DHTML	• Use knowledge of HTML and HTML editor to create personal and/or business websites following current professional and/or industry standards.
ECDM201	Basics of Marketing	• Understand fundamental marketing concepts, theories and principles in areas of marketing policy; of market and consumer behavior; of product, distribution, promotion and pricing decisions. Understand the role of marketing as a fundamental organizational policy process.
ECDM202	Basic concepts of DBMS	• Describe the fundamental elements of relational database management systems • Design ER-models to represent simple database application scenarios • Improve the database design by normalization.
ECDM203	Business Communication II	• Upon completion of the course, students are expected to be able to demonstrate a good understanding of: effective business writing. Research approaches and information collection. Developing and delivering effective presentations.
ECDM204	Case study on Marketing	• Identify key stages of the market planning process in order to create marketing plans through development of key sections common to most plans, as well as execution of rudimentary primary and secondary research.

ECDM205	Programming Lab on SQL	• Basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL. • Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
ECDM206	Drafting of Business Letters & Application of New Technology in Communication	• The ability to communicate effectively plays a major role in achieving career success. Technological advancements have increased the need for skilled communicators, and employers state that the application of acceptable communication skills is essential for a workforce to survive in a competitive, global environment. This course is designed to provide the student with those skills.
ECDM301	Principles of Management	• Evaluate the global context for taking managerial actions of planning, organizing and controlling. • Assess global situation, including opportunities and threats that will impact management of an organization. • Integrate management principles into management practices.
ECDM302	Marketing Management	• Critically evaluate the key analytical frameworks and tools used in marketing. • Apply key marketing theories, frameworks and tools to solve Marketing problems. • Utilise information of a firm's external and internal marketing environment to identify and prioritise appropriate marketing strategies.
ECDM303	Web designing using PHP	• Write PHP scripts to handle HTML forms. • Write regular expressions including modifiers, operators, and metacharacters. • Analyze and solve common Web application tasks by writing PHP programs.
ECDM304	Digital Marketing Overview	• Analyse the confluence of marketing, operations, and human resources in real-time delivery. • Demonstrate cognitive knowledge of the skills required in conducting online research and research on online markets, as well as in identifying, assessing and selecting digital market opportunities. • Explain emerging trends in digital marketing and critically assess the use of digital marketing tools by applying relevant marketing theories and frameworks.
ECDM305	Programming lab on PHP	• Create PHP programs that use various PHP library functions, and that manipulate files and directories. • Analyze and solve various database tasks using the PHP language.
ECDM306	Management Information System and Case studies.	• Analyse the role played by the six major types of information systems in organizations and their relationship to each other. • Describe the types of information systems supporting the major functional areas of the business. • Assess the relationship between organizations, information systems and business processes, including the processes for customer relationship management and supply chain management.
ECDM401	Social Media Marketing-I	• Generate unique, relevant and consistent content across social media platforms • Enjoy expert management of activities such as posting and boosting • Improve visibility among potential customers and broaden your client base
ECDM402	Services Marketing	• Understand the Concept of Services and intangible products.

		• Discuss the relevance of the services Industry to Industry. • Examine the characteristics of the services industry and the modus operandi. Analyse the role and relevance of Quality in Services
ECDM403	Search Engine Optimization & SMM	• Describe the main search engine optimisation techniques for business websites, discuss the process of effective SEO, including keyword research, writing optimised content, getting web pages indexed by search engines and tracking the outcomes; gain access to new online tools and resources to help implement successful SEO campaigns; discuss 'link popularity' and why it is an important part of the optimisation process.
ECDM404	Business Management	• Demonstrate an ability to apply general Management know-how in practical business situations. • Develop an understanding of business that reflects the moral responsibility of management to all relevant stakeholders and the natural environment. • Understand the nature and dynamics of social behavior relating to organizational performance in order to develop strategies to become effective in organizations.
ECDM405	Google Adwards & Google Analytics	• This structured e-learning activity will help you or your team to use a planned approach and gain actionable insight from Google Analytics. You'll learn techniques for customizing Google Analytics for a business and understanding advanced reporting, enabling you to improve your digital marketing effectiveness.
ECDM406	WordPress framework	· Set up a domain and hosting account · Set up a MySQL database on their server · Install WordPress on the MySQL database · Plan their website by choosing color schemes, fonts, layouts, and more · Search for themes in WordPress · Select, install, and activate a theme · Add posts to their website · Create website pages · Add images, photo galleries, and more

Course Outcome – B.Lib.I.Sci. & M.Lib.I.Sci.

Name of Course	Paper Code	Paper Name	Outcome
Library Science	BLIS 101	Foundations of Library and Information Science	• Will be learn enhance the understanding of Library and Information Science Education and Library Fields.
Library Science	BLIS 102	Information Management And Organizations	• Can apply the skills and attitudes of visioning, enterprenaurship, advocacy, planning and Management of libraries and information centers (LICS) and effective leadership in the LIS field
Library Science	BLIS 103	Reference Service & Sources	• Will learn skills of organizing information and recorded knowledge • Will be to provide traditional and modern information and reference services for users
Library Science	BLIS 104	Information Science	• Posses the skills to respect engage and collaborate with a diverse community in order to advocate for and construct inclusive, meaningful, and participatory library services programs and resources
Library Science	BLIS 106	Knowledge Organization- I: Classification (Theory)	• Will be Useful to understand the basic functions and principles of theory as well as Practical work in Library classification systems.
Library Science	BLIS 106	Information Processing: Cataloguing - I (Theory)	• Will be Useful to understand the basic functions and principles of theory as well as Practical work in Library Cataloguing.
Library Science	BLIS 107	Information communication Technologies (ICT) in Libraries (Theory)	• We learn the skills of ICT application in Information environment including Network and Communication systems
Library Science	BLIS 201	Librarianship as a Profession	• Will learn the skills of organizing information and recorded knowledge in Professional Associations.
Library Science	BLIS 202	Management of Library System	• Will be able to effectively administer and manage Libraries and Information Centers
Library Science	BLIS 203	Information Sources and Systems	• Will be able to provide traditional and modern information and reference services For users
Library Science	BLIS 204	Organization of Information Systems and Services	• Will be trained in Technological knowledge and professional skills
Library Science	BLIS 205	Knowledge Organization- II : Classification (Theory)	• Will be learned in Classification knowledge and practicals skills.
Library Science	BLIS 206	Information Processing: Cataloguing - II (Theory)	• Will be learned in Information Processing skills.
Library Science	BLIS 208	Knowledge Organization: Classification: Practical	• Will learn the practical skills of Dewey decimal classification and colon classification systems.
Library Science	BLIS 209	Information Processing: Cataloguing: Practical	• Will learn the Practical skills of Anglo American Cataloguing rules II R (AACR-II-R) and Classified catalogue Code (CCC).

Library Science	BLIS 210	Information Communication Technologies (ICT) and Libraries: Practicals	• Will become competent for job opportunities in LIS and related field. • Will be learned in Information communication technology skills
Library Science	BLIS 211	Information Sources : Viva – Voice	• Can manage to the various types of Reference sources
Library Science	MLIS 101	Information, Communication and Society	• Can manage information resources and the information life-cycle through the processes of collection development, organization, preservation, conservation, access, and dissemination in accordance with physical, virtual, and technical infrastructure and needs
Library Science	MLIS 102	Introduction To Research Methodology	• Students will be able to learning the library and information science research
Library Science	MLIS 103	Information Retrieval	• Students will be able to construct a keyword search statement in order to find relevant information
Library Science	MLIS 104	Management Of Libraries and Information Centres – A	• The students are able to identify & describe the characteristic of library management systems.
Library Science	MLIS 105	Information Technology: Basics (Theory)	• Will be trained in Information Communication Technologies knowledge and Library automation Skills. • Students will be able to choose appropriate database in order to search for scholarly articles on Their topics
Library Science	MLIS 201	Management Of Libraries And Information Centres – B	• The students will be understand a theory of TQM, Management of Libraries And Information Centres
Library Science	MLIS 202	Statistical Techniques Of Research & Bibliometrics	• Can perform and access research based practices through the application of Information literacy, inquiry, and research methods including data discovery, Analytics and qualitative measures.
Library Science	MLIS 203	Bibliographic Control and Information Systems	• The students will be able to identify the concept of Bibliographic Control and Information Systems
Library Science	MLIS 204	Information Technology Applications : Practical	• The students will be able to learning library software, CD search Webpage designing.

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Principal
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