AUXILIUM COLLEGE (Autonomous)

(Accredited by NAAC with A+ Grade with a CGPA of 3.55 out of 4 in the 3rd cycle)
Gandhi Nagar, Vellore – 6.

Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes(PSOs) and Course Outcomes(COs) of the Programmes offered by the Institution.

FOCUS: GLOBAL NEEDS

PROGRAMME	Course Code	Title of Course	Description	PO	PSO	CO
B.A. English	UENGA20	General English Paper-I	The course offers a comprehensive outlook of Life coping principles and their vision to establish Humaneness through poetries and short stories that offer students the space for language-learning and emulation of life values that are on demand across the globe and the country.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Appreciate life, think critically, and develop positive, interpersonal relationship with fellow humans.	Discern (figure out) effective ways of communication with etiquette
B.A. English	UENGB20	General English Paper-II	The prescribed course units highlight the language skills as well as	Appreciate biodiversity and enhance eco-	Apply the knowledge of form, structure, history and	Outline the values and ideas from the prescribed texts in

			life-skills centered around Eco-consciousness, tolerance and acceptance of diverse cultures and human characteristics	consciousness for sustainable development of the society.	contextual cultural diversity and comprehend the applications of the English Language in practice.	self-made sentences with accuracy, clarity and fluency.
B.A. English	UENGC20	General English Paper-III	As a means of language-learning the course explores contemporary issues in the context of human values, human rights and sustainable development goals	Emulate positive social values and exercise leadership qualities and team work.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Enable students to be aware of the contemporary social issues of national and global importance.
B.A. English	UENGD20	General English Paper-IV	Explores the world of the minds, its prejudices and attitudes, and its quest for peace	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Appreciate life, think critically, and develop positive, interpersonal relationship with fellow humans	Relate with real life situations by reading the literary text from the past.
B.A. English	UCENA20	An Introduction to Literary Studies	The course introduces students to the fundamentals of literary forms, their evolution since inception and their significant practitioners in	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively	Remember the principles of Literature in general and English Literature in particular and	Recognize fundamental literary forms, terms, expressions, techniques and the outline of English literary studies from

			the history of English literature, that is of global relevance in terms of higher studies, research and employment	communicate general and discipline-specific information, ideas and opinions.	understand its typological, critical, socio cultural aspects	16th to 20th century. Explain various genres such as poetry, essays, dramas and ballads
B.A. English	UCENB20	English Pronunciation: Theory and Practice	The course introduces students to the sounds of English language to the effect that they remember, identify, use and classify the sounds of English Language and appropriate their pronunciation to that of standard English Pronunciation.	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively communicate general and discipline-specific information, ideas and opinions. Attain fluency, accuracy and a good command in the four skills (listening, speaking, reading and writing) of English Language. Apply the knowledge of form, structure, history and contextual cultural diversity and comprehend the applications of the English Language in practice	Attain fluency, accuracy and a good command in the four skills (listening, speaking, reading and writing) of English Language Apply the knowledge of form, structure, history and contextual cultural diversity and comprehend the applications of the English Language in practice	Demonstrate understanding of the structural organization of speech sounds of English language and the subtle variations in its pronunciationIllustrate , identify and label the parts of the human articulator system Remember the English vowels, consonants and diphthongs along with their corresponding (IPA) Phonetic symbols

B.A.English	UALSC20	Allied - Language Skills for Communication	The course seeks to impart the essential skills required to communicate in English as it is the global link language and is the medium required for employment and research	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively communicate general and discipline-specific information, ideas and opinions. Attain fluency, accuracy and a good command in the four skills (listening, speaking, reading and writing) of English Language Apply the knowledge of form, structure, history and contextual cultural diversity and comprehend the applications of the English Language in practice	Attain fluency, accuracy and a good command in the four skills (listening, speaking, reading and writing) of English Language Apply the knowledge of form, structure, history and contextual cultural diversity and comprehend the applications of the English Language in practice	Demonstrate adequate efficiency in oral and written communication in English Demonstrate knowledge of the structure of English language Understand the process of communication in general and communication in English Utilize the knowledge and skills of English language to get employment

B.A.English	UAEEG20	Allied II: Elements of English Grammar	The course familiarises students with the essentials of English Grammar in order to enable them to attain accuracy in the learning and use of English language and fluency, that is of global relevance in terms of higher studies, research and employment	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively communicate general and discipline-specific information, ideas and opinions. Attain fluency, accuracy and a good command in the four skills (listening, speaking, reading and writing) of English Language Apply the knowledge of form, structure, history and contextual cultural diversity and comprehend the applications of the English Language in practice	Attain fluency, accuracy and a good command in the four skills (listening, speaking, reading and writing) of English Language Apply the knowledge of form, structure, history and contextual cultural diversity and comprehend the applications of the English Language in practice	Recall the basic rules of English grammar Explain basic concepts of grammar Apply rules related to structure and correct pattern of English language Use English Language with grammatical accuracy

B.A.English	UCENE20	Elizabethan Literature	The course introduces the social and cultural background of Elizabethan Age in English Literature, seminal works of Elizabethan writers and its age-specific nuances in literary production, that is of global relevance in terms of higher studies, research and employment	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively communicate general and discipline-specific information, ideas and opinions.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Identify the literary history of Elizabethan Age Discuss the major themes and forms in the Literature of the Elizabethan period Analyse the Elizabethan writing as both register and response to historical, social and political development of the era.
B.A. English	UCENF20	American Literature	The course introduces the historical, social and cultural background of American Literature in English, seminal works of American writers and critics, that is of global relevance in terms of higher studies, research and employment,	Attain knowledge and understand the principles and concepts in the respective discipline.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Identify characteristic forms or styles of expression during different historical periods in different regions. Discuss the issues, conflicts, preoccupations and themes of various literary texts. Examine the historical, cultural,

						rhetorical contexts in which the literary texts were written. Analyze literary works as expressions of individual or communal values within the social, political, cultural or religious contexts of different literary periods.
B.A.English	UCENG20	Neo-Classical Literature	The course introduces the social and cultural background of Neo-Classical Age in English Literature, seminal works of Neo-CLassical writers and its age-specific nuances in literary production	Attain knowledge and understand the principles and concepts in the respective discipline.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Recall the historical, social and biographical details of the Era Interpret the contextual structure of the literary texts of the Era Apply Critical Perspectives on the Literary Works Appreciate the contribution of the Texts and explore the social, historical,

						artistic and literary influences of the period. Analyse insights to the various literary genres of the Era
B.A.English	UCENH20	Romantic Literature	The course introduces the social and cultural background of Romantic Literature in English, seminal works of Romantic writers and its age-specific nuances in literary production that is of global relevance in terms of higher studies, research and employment	Attain knowledge and understand the principles and concepts in the respective discipline.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Locate the historical and cultural context of English Romanticism. Discuss the traits of Romanticism with emphasis on concepts of self, imagination and the unconscious Apply historical, social, philosophical and political contexts to interpret texts
B.A.English	UCENI20	Shakespeare	The course familiarises students with the literary works of Shakespeare, its critical and cultural implications and its influence on readers, writers and translators, that is of global relevance in terms of higher studies,	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively communicate general and discipline-specific information,	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Identify the seminal works of Shakespeare Understand the style and literary devices used by him Analyse the relevance of Shakespeare in Elizabethan Drama and later beyond the

			research and employment	ideas and opinions.		confines of time and space Evaluate Criticism of Shakespeare's works from critics from various timeframes.
B.A.English	UCENJ20	Victorian Literature	The course introduces the social and cultural background of Victorian Literature in English, seminal works of Victorian writers and its age-specific nuances in literary production, that is of global relevance in terms of higher studies, research and employment	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively communicate general and discipline-specific information, ideas and opinions.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Locate the realm of the Victorian era in the field of Historical Literary Studies Discuss the shift/transition from an Idealistic to the Realistic World of Living Examine different forms/genres personalized by Victorian writers with the predominant themes of the Age
B.A.English	UCENL20	Twentieth Century	The course introduces students to the literature in English produced in the twentieth century, that is of global relevance in terms of higher studies,	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively	Remember the principles of Literature in general and English Literature in particular and	Recognise Modern Literature from a variety of cultures, languages and historic periods Explain the concepts

			research and employment	communicate general and discipline-specific information, ideas and opinions.	understand its typological, critical, socio cultural aspects	of Enlightenment, Revolution, Capitalism/Imperialism, Democracy and political history Use the spiritual, social and intellectual background of the age to interpret the works of various writers during the Modern Age Analyse various elements such as diction, tone, form, genre, imagery, figures of speech, symbolisms
B.A.English	UEENC20	Elective II A: Women's Writing	the course aims to sensitize students on gender equality by familiarizing them with literary texts written by women that address the subordination, discrimination and objectification of women,	Emulate positive social values and exercise leadership qualities and team work.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Identify the positioning, stature & development of women in the society through ages via the Literary texts Appreciate works by women for the theme, style and form.

			across the globe and the Indian subcontinent			Examine the form and content of the male – defined concepts and women - oriented concepts Evaluate the works by women for its political and social relevance
B.A.English	UEENE20	Elective II A: New Literature in English	students are introduced to Literature in English as firsthand literary productions or in translation, from countries where English is spoken as a second language/link language	Attain knowledge and understand the principles and concepts in the respective discipline. Effectively communicate general and discipline-specific information, ideas and opinions.	Remember the principles of Literature in general and English Literature in particular and understand its typological, critical, socio cultural aspects	Identify the relationship between Great Britain and Nations that were once colonized. Describe modes of writing and reading that interrogate histories and the presence of colonial mentalities and ways of life in a variety of postcolonial locations. Discuss the problems of race, class, history and identity presented in the Postcolonial texts. Analyze the problems

						of identity, subjugation and cultural identification Appraise the complex maze of theoretical terms and concepts that characterize Postcolonial studies and savor the wonderful variety and richness of Literature.
B. A. History	UATMA20, UATMB20	Tourism-I/II	To enable the students to understand the role and importance of transport and communication in the tourism sector	Attain knowledge and understand the principles and concepts in the respective discipline	Develop an understanding of the past life of the people, their culture, their religion, and the social system to transform into responsible and honest citizens	Describe the evolution of travel and tourism in the historical context.
B.A. History	UEHIA20	History of Asia from 1900 A.D to 2000 A.D	To help the students to comprehend the Political History of Asian countries and their formation	Attain knowledge and understand the principles and concepts in the respective discipline	Develop a critical approach to the study of History and effectively communicate the values and ideas of the leaders to the	Examine the Independence of Indonesia and the Formation of new countries like Vietnam, Laos and Cambodia

					Society and become the Agents of social change.	
B.A. History	UAMGA20 UAMGB20	Modern Governments	To help the students to understand the basic concepts of the Constitution	Attain knowledge and understand the principles and concepts in the respective discipline	Develop a critical approach to the study of History and effectively communicate the values and ideas of the leaders to the Society and become the Agents of social change.	Describe the basic concepts of the Constitution
B.A. History	UCHIH20	History of Europe from 1789 A.D to 1945 A.D	To help the students to know the various events occurred in the history of Europe from 1789 to 1945 A.D	Effectively communicate general and discipline-specific information, ideas and options	Acquire the social values that indwell in History to become the leaders of politics and commit to work for social justice, peace, and sustainable development	Analyze the results of the French revolution and evaluate its impact in Present day political system and various reforms introduced by Napoleon Bonaparte to become an effective leader

B.A. History	UCHII20	History of Ancient civilization	To help the students to understand the World Civilization and its contribution to the World	Effectively communicate general and discipline-specific information, ideas and options	Acquire the social values that indwell in History to become the leaders of politics and commit to work for social justice, peace, and sustainable development	Compare the Early Civilizations with Modern Civilization and to become the Agents of the Social Change and communicate the ideas and principles of Hebrew, Persian civilization
B.A. History	UCHIK20	History of Japan up to 1990 A.D	To help the students to know the Early History of Japan	Emulate positive social values and exercise leadership qualities and teamwork	Develop an understanding of the past life of the people, their culture, their religion, and the social system to transform into responsible and honest citizens	Analyze the Emergence of Japan as the World Powers and became the agents of Social Change
B.A. History	UCHIL20	History of United States of America from 1776 to 1965 A.D	To enable the students to understand the causes for the discovery of America and its development through the ages	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Prepare for various types of Competitive Examinations and acquire human values like equality, freedom, and Social Justice and contribute towards	Appraise the role played by Abraham Lincoln in Civil war to create respect for equality, freedom and respect for diversity and exercise leadership and Team

					the needs of the society	Spirit
B.B.A	UCBAA20	Principles of Management	Course designed to meet the fundamental concepts of management, functions and its principles	To attain knowledge and understand the managerial principles and concepts of the course adopted.	To attain the ability to be self - directed towards their career and contribute to the society as responsible citizens.	Acquire the knowledge related to management concepts and its principles
B.B.A	UABUA20	Business Communication	Course depicts the basic concepts of communication process	Communicate the general ideas, opportunities and opinions and to become empowered and motivated citizens of the country.	Acquire the basic and managerial communications skills to gain professionalism.	Impart the importance of Communication and to understand the concepts of Communication.
B.B.A	UCBAC20	Organisational Behaviour	Know the fundamental concept of Organizational Behaviour	Adapt towards the positive thinking capacity, to adapt the social values, to exercise leadership qualities and bringing out their capabilities through team work	To get an exposure by applying the theoretical knowledge into practice by carrying out the institutional training and projects in the organizations.	Assess the attitudinal and motivational behaviour and group dynamics of an individual
B.B.A	UABEA20	Business Environment and Ethics	To know about the environment and its impact on business.	Mold the students to face the challenges in the global business	To attain the ability to be self - directed towards their career	To know about the environment and its impact on business

			Recognize the importance of business ethics and social responsibility in today's business	environment and the society.	and contribute to the society as responsible citizens.	To recognize the importance of business ethics and social responsibility as an individual to the society
B.B.A	UCBAE20	Marketing Management	Course comprehend the principles, concepts and functions of marketing and to design a marketing strategies for a dynamic marketing and attain the knowledge of Marketing Mix	Mold the students to face the challenges in the global business environment and the society.	Acquire the basic and managerial communications skills to gain professionalism.	Learn the recent trends in marketing
B.B.A	UCBAF20	Financial Accounting	Course highlights the fundamentals of accounting.	Prepare the students to be persistent enough to pull out their own ideas and opinions and to become a strong pillar to the family and society highlighting their feminine power.	Acquire the ability to be a future leader, manager and an entrepreneur reflecting ethical and social values.	Give them a basic knowledge of Accounting principles and practices

B.B.A	UAEBA20	Economics for Business	Course understand the economic concepts and techniques in evaluating business decisions	Attain knowledge and understand the principles and concepts in the respective discipline.	To attain knowledge and understand the managerial principles and concepts of the course adopted.	Have depth knowledge in the basics of Managerial Economics
B.B.A	UEBAA20	International Business	To familiarize the students to the basic concepts of Globalization, Domestic and International Trade	Mold the students to face the challenges in the global business environment and the society	To acquire the ability to be a future leader, manager and an entrepreneur reflecting ethical and social values.	Familiarize in various International Economic Institutions and social responsibility and ethical issues in international business
B.B.A	UEBAB20	Logistics and Supply Chain Management	To familiarize the students with the basic concepts of logistics and supply chain management	To be stimulated towards the change and to be conscious for sustainable development of the society	To acquire the ability to be a future leader, manager and an entrepreneur reflecting ethical and social values.	Be enriched about the activities involved in distribution network planning and Integrated Supply Chain Management
B.B.A	UCBAH20	Cost and Management Accounting	To enable the students understand the concept of Management and Cost Accounting	Prepare the students to be persistent enough to pull out their own ideas and opinions and to become a strong pillar to the family an society highlighting their feminine power.	Acquire the ability to be a future leader, manager and an entrepreneur reflecting ethical and social values.	Gain knowledge on the concepts of management and cost accounting techniques

B.B.A	UCBAJ20	Research Methodology	To understand the basic concepts of research	To formulate, to apply the theoretical knowledge into practice by carrying the institutional training and projects, to adopted sense of creative thinking and learn problem solving skills to take up challenges faced in today's modern world.	To get an exposure by applying the theoretical knowledge into practice by carrying out the institutional training and projects in the organizations	Know the general definition of research and qualities of research. . Be able to write report and do statistical analysis
B.B.A	UCBAK20	Human Resource Management and Development	Course designed to understand the various HR functions like Recruitment, selection, training process and also about performance appraisal.	Mold the students to face the challenges in the global business environment and the society.	To acquire the ability to be a future leader, manager and an entrepreneur reflecting ethical and social values.	Attain the knowledge of the various HR functions and its importance
B.B.A	UCBAL20	Financial Management	Course enable the learners to understand concept of financial management, scope, objectives and time value of money.	Mold the students to face the challenges in the global business environment and the society.	To acquire the ability to be a future leader, manager and an entrepreneur reflecting ethical and social values.	Be well-versed in the financial decision, functions and organization of financial managements

B.B.A	UEBAC20	Total Quality Management	Course is designed to make the students understand the concepts of total quality management	To communicate the general ideas, opportunities and opinions and to become empowered and motivated citizens of the country.	To attain the ability to be self - directed towards their career and contribute to the society as responsible citizens.	Evaluate the principles of quality management and to explain how these principles can be applied within quality management systems
B.B.A	UGBAA520	Human Resource Management	The course is designed to understand the basic concepts of HRM	To bring up the economically challenged, socially backward young women to be competent with today's expectation of the competitive world for their sustenance	To attain the ability to be self - directed towards their career and contribute to the society as responsible citizens.	Integrate the knowledge of HR concepts
B.B.A	USBAE520	Campus to Corporate	Course is designed to build confidence, develop self-esteem, and to bring positive changes in the attitude & behavior of the students	Mold the students to face the challenges in the global business environment and the society.	To acquire the basic and managerial communications skills to gain professionalism.	Proactively manage the transition from being the student to the employee

B.B.A	USBAB120	Winning Through Communication	Course is designed to understand the concept in communication	Adapt towards the positive thinking capacity, to adapt the social values, to exercise leadership qualities and bringing out their capabilities through team work	Acquire the basic and managerial communications skills to gain professionalism.	To understand the role of communication in Personal and Professional success
B.B.A	USBAD320/ USBAD420	Hotel Planning and Administration	Course is designed to develop a conceptual understanding of the Hotel Planning and Administration	To formulate, to apply the theoretical knowledge into practice by carrying the institutional training and projects, to adopted sense of creative thinking and learn problem solving skills to take up challenges faced in today's modern world.	Acquire the basic and managerial communications skills to gain professionalism.	Understand the concepts in Hotel Planning and Administration
B.B.A	USBAC320/ /USBAC420	Hospital Planning and Administration	Course enable the students to understand the planning of Modern Hospital	To formulate, to apply the theoretical knowledge into practice by carrying the institutional training and projects,	Acquire the basic and managerial communications skills to gain professionalism.	Be familiarized with Organization Structure and Medical Records of a Hospital

				to adopted sense of creative thinking and learn problem solving skills to take up challenges faced in today's modern world.		
B.C.A	UCCAA20	Programming in C	To learning the basic programming constructs they can easily switch over to any other language in future.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Acquire skills in computer and information technology and also be competent in the field of Commerce, Mathematics and Management.	Introduce the students to understand the concept of basic programming- thereby reducing the design complexity and increasing the reusability of a component. Construct the basic structure of C-programming, declaration and usage of variable. Understand and develop conditional and iterative statements to write programs. Exercise C programs that uses

						array and string. Develop user defined functions to solve real time problems
B.C.A	UCCAB20	Fundamentals of Information Technology	The main objective is to introduce Information Technology in a Simple Language to all undergraduate students regardless of their specialization.	Attain knowledge and understand the principles and concepts in the respective discipline.	Equip the students with requisite knowledge, skills and right attitude necessary to provide effective software development skills in a global environment and also focus on preparing students for roles pertaining to computer applications and IT industry.	Understand the fundamental concepts of computers with the present level of knowledge of the students. Identify the basic terminology used in computer programming. . Understand the basic taxonomy and terminology of the data communication networking. Acquire the knowledge of Internet and its applications. . Analyze the difference between an operating system and an application program.

B.C.A	UCCAC20	Practical-I: C	To design, develop and test programs written in C.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Ability to work as a member or leader in diverse teams in multidisciplinary environment. And identify opportunities, entrepreneurship vision and use of innovative ideas to create value and wealth for the betterment of the individual and society.	Exercise with basic structure of the C program, declaration and usage of variable. Resolve mathematical and scientific problem. Develop the programs using conditional and iterative statements. Implement array and string concept in C program. . Write real time problems using user defined functions
B.C.A	UCCAD20	Python	To apply a solution clearly and accurately in a program using Python	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government	Understand the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python Express different Decision-Making statements and Functions. Interpret Object oriented programming in Python. Explain how

					organizations, faculty for computer science and applications in educating institutions.	to design GUI Applications in Python and evaluate different database operations. . Design and develop Client Server network applications using python
B.C.A	UCCAE20	Computer Organization and Architecture	To make students understand the basic structure and operation of digital computer. Also understand the hardware-software interface.	Effectively communicate general and discipline-specific information, ideas and opinions.	Equip the students with requisite knowledge, skills and right attitude necessary to provide effective software development skills in a global environment and also focus on preparing students for roles pertaining to computer applications and IT industry.	Explain the organization of basic computer, its design and the design of control Unit. Elaborate advanced concepts of computer architecture, Parallel Processing, Inter-processor communication and synchronization. .Demonstrate the working of central processing unit and RISC and CISC Architecture. Describe the

						operations and language the register transfer, micro operations and input-output organization. .Understand the organization of memory and memory management hardware.
B.C.A	UCCAF20	Practical-II: Python	To describe the core syntax and semantics of Python programming	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Ability to work as a member or leader in diverse teams in multidisciplinary environment. And identify opportunities, entrepreneurship vision and use of innovative ideas to create value and wealth for the betterment of the individual and society.	To Understand the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python Express different Decision-Making statements and Functions. Interpret Object oriented programming in Python. Explain how to design GUI Applications in Python and evaluate different database operations.

						Design and develop Client Server network applications using python.
B.C.A	UCCAG20	Data Structures	To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures	Effectively communicate general and discipline-specific information, ideas and opinions.	Equip the students with requisite knowledge, skills and right attitude necessary to provide effective software development skills in a global environment and also focus on preparing students for roles pertaining to computer applications and IT industry.	Discuss the concept of complexity of algorithms, data types, algorithms, Big O notation. Apply basic data structures such as arrays, linked lists, stacks and queues. . Identify problem involving trees and binary search trees. Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data using linked list. . Analyze graphs and describe the hash function and concepts of collision and its resolution methods.

B.C.A	UCCAH20	Java Programming	This course provides an introduction to object oriented programming (OOP) using the Java programming language.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Equip the students with requisite knowledge, skills and right attitude necessary to provide effective software development skills in a global environment and also focus on preparing students for roles pertaining to computer applications and IT industry.	Able to understand the use of OOPs concepts. Able to solve real world problems using OOP techniques. To understand the use of polymorphism and Inheritance. . Able to understand the use of Packages and Interface in java. Able to develop and understand exception handling, multithreaded applications with synchronization. . Able to design GUI based applications and develop AWT and applets for web applications.
B.C.A	UCCAI20	Design and Analysis of Algorithms	To demonstrate a familiarity with major algorithms and data structures.	Emulate positive social values and exercise leadership qualities and team work.	Acquire skills in computer and information technology and also be competent in the	Define the basic concepts of algorithms and analyze the performance of algorithms.

					field of Commerce, Mathematics and Management.	Discuss various algorithm design techniques for developing algorithms. Identify the usage of set of rules design methods including the greedy approach, divide and overcome, dynamic programming, and certain. Understand the variations among backtracking, graph coloring and 8 Queens problems Understand NP completeness and identify different NP complete problems
B.C.A	UCCAJ20	Practical-III: Java	To understand object oriented programming concepts, and apply them in solving problems.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute	Introduce and update knowledge relevant to IT like networking, computer graphics, web development,	Understand the fundamentals of object-oriented programming in Java, including defining classes, objects,

				towards the needs of the society.	trouble shooting, and hardware and software skills. Also, to develop software solutions to problems across a broad range of application domains through analysis and design.	invoking methods etc. and I/O Streams. Establish exception handling is used to minimize the errors in Java programming. . Demonstrate the concepts of Packages and Interface. Evaluate the Java programs to implement error handling techniques using exception handling. . Design GUI based applications and develop applets for web applications.

B.C.A	UCCAK20	Practical-IV: Data Structures and Algorithms	Apply important algorithmic design paradigms and methods of analysis.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Equip the students with requisite knowledge, skills and right attitude necessary to provide effective software development skills in a global environment and also focus on preparing students for roles pertaining to computer applications and IT industry.	Implement PUSH, POP and Add and delete operations of Stack using Arrays. Explore the Infix to postfix conversion and binary tree traversals and its algorithms like depth first and breadth first traversal. . Understanding polynomial addition and merge sort using Divide and Conquer Technique. Implement travelling Salesman problem using Dynamic programming and Hashing with two collision techniques. . Implement PUSH, POP and Add and delete operations of Stack using Arrays.

B.C.A	USCSA320	SBE: Accounting Software	To develop computer skills of recording financial transactions, preparation of annual accounts and reports using Tally.	Effectively communicate general and discipline-specific information, ideas and opinions.	Acquire skills in computer and information technology and also be competent in the field of Commerce, Mathematics and Management.	Understand the basics in Tally and company creation. Creating vouchers, ledgers accounts, Balance Sheet. Demonstrate Profit And Loss Account and Reconciliation of the bank account. Create company accounts that use various functions like Cost Category and Cost Centre. Learn to apply the tools & techniques in the interpretation of data for managerial decision – making.
B.C.A	UCCAL20	Data Communications and Networking	To introduce analysis and design of computer and communication networks. Understand the network layered architecture and the protocol stack.	Emulate positive social values and exercise leadership qualities and team work.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications,	Describe the Functions of each layer in OSI and TCP/IP Model. Explain the types of Transmission Media with Real-Time

					Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Applications. . Apply Time and Frequency concept of analysis. Manage Network functions for an Organization. . Analyze various Routing Algorithms and Protocols.
B.C.A	UCCAM20	Operating System	To analyze: processes, resource control (concurrency etc.), physical and virtual memory, scheduling, I/O.	Attain knowledge and understand the principles and concepts in the respective discipline.	Introduce and update knowledge relevant to IT like networking, computer graphics, web development, trouble shooting, and hardware and software skills. Also to develop software solutions to problems across a broad range of application domains through analysis and design.	Acquire the important computer system resources and the role of operating system in their management policies and algorithms. Understand the process management policies and scheduling of processes by CPU. . Evaluate the requirement for process synchronization and coordination handled

						by operating system. Describe and analyze the memory management and its allocation policies. . Entity use and evaluate the storage management policies with respect to different storage management technologies.
B.C.A	UCCAN20	.NET Programming	Design and develop professional Console and Window based .NET application.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Introduce and update knowledge relevant to IT like networking, computer graphics, web development, trouble shooting, and hardware and software skills. Also, to develop software solutions to problems across a broad range of application domains through analysis and design.	Understand the concepts of .NET Framework and C#. Apply the usage of Methods, Arrays and Strings. Interpret the concepts of Constructors, Inheritance and Interfaces. Analyze Operator Overloading, Delegates, Events and Exceptions. Create Windows Applications and Web

						- based Applications.
B.C.A	UCCA020	Practical V: Linux	To learn programmatically to implement simple OS mechanisms.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Equip the students with requisite knowledge, skills and right attitude necessary to provide effective software development skills in a global environment and also focus on preparing students for roles pertaining to computer applications and IT	Become familiar with the C language, compiler, and make files to understand the high-level structure of the Linux kernel. Understand the high-level structure of the Linux kernel both in concept and source code. Acquire a detailed understanding of one aspect (the scheduler) of the Linux kernel. To learn to develop software for Linux systems. . To obtain a foundation for an advanced course in operating systems.

B.C.A	UCCAP20	Practical VI: .NET	Identify and resolve problems in C#.NET window based application.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Understand code solutions and compile C# projects within the .NET framework. Create user interactive web pages using .NET. To develop, implement and creating Applications with C#. Debug, compile, and run a simple application. Create Mobile Application using .NET compact Framework
B.C.A	USCSB420	SBE: Design and Animation	Identify the categories of Tools and Identify each tools corresponding keyboard shortcut.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Ability to analyze social and environmental aspects with professional values, ethics and equity to transform the knowledge, skills and expertise to the	Design, create and animate objects and characters with naturalistic and expressive movements and poses. Design and create hand-drawn and/or computer-generated

					community.	drawings using principles of art, design and composition. Select and use appropriate tools and technologies for the development of animation projects. Contribute to the planning, implementation and evaluation of animation projects. . Plan, develop and execute a series of effective and believable animation sequences.
B.C.A	UCCAQ20	Relational Database Management Systems	The objective of this course is to expose the students to the fundamentals & basic concepts in relational Data Base Management Systems.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and	Demonstrate an understanding of the elementary & advanced features of DBMS & RDBMS. Write the SQL commands to create tables and Triggers,

					communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	insert/update/delete data, and query data in a relational DBMS. . Analyze and Design a database based on a data model considering the normalization to a specified level. Apply the storage size of the database and design appropriate storage techniques. . Analyze the requirements of transaction processing, concurrency control Analyze and XML Structure
B.C.A	UCCAR20	Software Engineering	To develop, maintain efficient, reliable and cost effective software solutions.	Emulate positive social values and exercise leadership qualities and team work.	Introduce and update knowledge relevant to IT like networking, computer graphics, web development, trouble shooting, and	Apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction,

					hardware and software skills. Also to develop software solutions to problems across a broad range of application domains through analysis and design.	and deployment. Discuss the function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. Manage the time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals Identify and analyzes the common threats in each domain. Understand architectural design in order to minimize the risks and errors. . Test the techniques for ensuring high quality

						software and Understand the capabilities of cost estimation.
B.C.A	UCCAS20	Mobile Application Development	To learn about how to develop an android services and to publish android application for use.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Understanding of Android and Android SDK and know about its development environment. Recognize the architecture of Android and its tools. Analyze Eclipse and Android Development Tools (ADT). Understanding of the specific requirements, possibilities and challenges when developing for a mobile context. . Understanding of the interaction between user interface and underlying application infrastructure. Define to plan and carry out a

						design work including developing a prototype that can be evaluated with a specified user group. . Develop practical skills and knowledge to construct software for a mobile application and the ability to reflect over possibilities and demands in collaborative software development.
B.C.A	UECAA20	Elective I A: Resource Management Techniques	Analyze Transportation Model and Solve optimization problems using dual simplex method.	Emulate positive social values and exercise leadership qualities and team work.	Ability to analyze social and environmental aspects with professional values, ethics and equity to transform the knowledge, skills and expertise to the community.	Identify the role of computer in Operational Research techniques. Apply linear programming to solve real-life applications. . Analyze Transportation Model and Solve optimization problems using dual simplex

						method. Describe Assignment Model and Travelling Salesman Problem, Sequencing problem. . Use PERT and CPM for problems in project management
B.C.A	UECAB20	Elective- I B: Cloud Computing	Discuss the fundamental concepts in cloud computing technologies.	Attain knowledge and understand the principles and concepts in the respective discipline.	Ability to analyze social and environmental aspects with professional values, ethics and equity to transform the knowledge, skills and expertise to the community.	Understand the fundamental concepts in cloud computing technologies. Analyze and integrate the cloud enabling services. . Analyze the architecture and concept of different cloud models: IaaS, PaaS, SaaS. Understand and familiar with the deployment models. . Comprehend the Cloud Data Security concepts and how they are addressed with the security mechanisms.

B.C.A	UECAC20	Elective- I C: Object Oriented Analysis and Design	Identify, Analyze the subsystems, various components and collaborate them interchangeably Model the event driven state of object and transform them into implementation specific layouts.	Emulate positive social values and exercise leadership qualities and team work.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Analyze, design, document the requirements through use case driven approach. Identify, analyze, and model structural and behavioral concepts of the system. . Develop, explore the conceptual model into various scenarios and applications. Apply the concepts of architectural design for deploying the code for software. . Apply the Testing Strategies and Debugging Principles for measuring the User Satisfaction.
B.C.A	UCCAT20	Practical VII: RDBMS	To apply relational database theory and be able to describe relational algebra expression, tuple and domain relation	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills	Introduce and update knowledge relevant to IT like networking, computer graphics,	Understand, Appreciate and effectively explain the underlying concepts of Database

			expression from queries.	and contribute towards the needs of the society.	web development, trouble shooting, and hardware and software skills. Also to develop software solutions to problems across a broad range of application domains through analysis and design.	technologies. Programming PL/SQL including stored procedures, stored functions, cursors, packages. Design and implement a database schema for a given problem-domain. Construct a query using SQL DDL, DML, and DCL Commands. Prepare various database tables and joins them using SQL commands. Analyze various aggregate functions using SQL commands. Design and develop front end tool VB .NET to design forms, and select, insert, delete, update using Data Source Binding.

B.C.A	UCCAU20	Practical VIII: Mobile Application Development	To understand how to work with various mobile application development frameworks.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Establishing the development environment. Implementing the layout to add action bar. Understanding the interfaces using views, menus and notification. Apply and learn multiple screens to emulate android application. . Perform basic interaction with application.
B.C.A	USCSG520	Skill-Based Elective V: R Programming	Understand the usage of R programming interactive environment.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Ability to analyze social and environmental aspects with professional values, ethics and equity to transform the knowledge, skills and expertise to the community.	To use R for analytical programming. Explain the use of data structure and loop functions. Analyze data and generate reports based on the data. Apply various

						concepts to write programs in R. Implementing Strings in R
B.C.A	UCCAV20	Internet and Web Programming	Enhance the programming experience with the help of tools like editors and debuggers that makes JavaScript coding easier and more interactive.	Emulate positive social values and exercise leadership qualities and team work.	Introduce and update knowledge relevant to IT like networking, computer graphics, web development, trouble shooting, and hardware and software skills. Also to develop software solutions to problems across a broad range of application domains through analysis and design.	Acquire the basic concept of JavaScript. Use operators, variables, arrays, control structures, functions and objects in JavaScript. Create PHP programs that use various PHP library functions, and that manipulate files and directories. Design a responsive web site using HTML, PHP, MySQL and Apache. . Students will be able to build dynamic web pages using JavaScript (Client Side Programming) and apply their knowledge to create interactive

						websites.
B.C.A	UCCAW20	Data Mining	To analyze the data, identify the problems, and choose the relevant models and algorithms to apply.	Attain knowledge and understand the principles and concepts in the respective discipline.	Ability to work as a member or leader in diverse teams in multidisciplinary environment. And identify opportunities, entrepreneurship vision and use of innovative ideas to create value and wealth for the betterment of the individual and society	Understand Data Warehouse fundamentals and Data Mining Principles. Understand and implement classical algorithms in data mining and identify the application area of algorithms. Compare and evaluate different data mining techniques like, prediction, clustering and association rule mining. Describe complex data types with respect to spatial and web mining. . Analyze the temporal mining techniques to detect patterns in the e-world.

B.C.A	UECAD20	Elective II A: Cryptography	To understand Cryptography Theories, Algorithms and Systems.	Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Classify the symmetric encryption techniques. Illustrate various Public key cryptographic techniques. Evaluate the authentication and hash algorithms. Summarize the intrusion detection and its solutions to overcome the attacks. Basic concepts of system level security.
B.C.A	UECAE20	Elective II B: Computer Graphics	Understand three dimensional graphics and their transformations and to become familiar with clipping techniques.	Effectively communicate general and discipline-specific information, ideas and opinions.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies,	Understand the basic objectives and scope of computer graphics To acquire knowledge on graphics hardware devices and software used. Implement various algorithms to scan, convert the basic

					undertaking government organizations, faculty for computer science and applications in educating institutions.	geometrical primitives, Transformations, Area filling, clipping. Understand the concepts of and techniques used in 2D and 3D computer graphics, including viewing transformations, hierarchical modeling, color, lighting and texture Understand the concepts of computer graphics, including viewing, projection, Perspective, modeling and transformation in two and three dimensions.
B.C.A	UECAF20	Elective III A: Mobile Computing	Understand fundamentals of wireless communications. Analyze security, energy efficiency, mobility,	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills	Become proficient and ensure job in the key areas of computer science like Web designing	Understand the basic concepts of mobile computing. Expand the network layer protocols and Ad

			scalability, and their unique characteristics in wireless networks.	and contribute towards the needs of the society.	and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Hoc networks. Apply the basis of transport and application layer protocols. Develop knowledge about different mobile platforms and application development. Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks.
B.C.A	UECAG20	Elective III B: Artificial Intelligence	Investigate applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.	Attain knowledge and understand the principles and concepts in the respective discipline.	Ability to work as a member or leader in diverse teams in multidisciplinary environment. And identify opportunities, entrepreneurship vision and use of innovative ideas to create value and	Understanding different types of AI Agents and its Environments. Know Various AI Search Algorithms (uninformed, informed, heuristic search). Understand the fundamentals of

					wealth for the betterment of the individual and society.	Knowledge representation (logic based, frame based). Understand the different types of Learning. Ability to apply knowledge representation, reasoning , and machine learning Techniques
B.C.A	UCCAX20	Practical IX: Internet and Web Programming	Comprehend the usage of PHP and JavaScript in dynamic web development.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in	Know variable naming rules and JavaScript data types. Use operators, variables, arrays, control structures, functions and objects in JavaScript. Demonstrate objects and arrays usage Create PHP programs that use various PHP library functions, and that manipulate files and directories.

					educating institutions.	Validate user input and create cookies in PHP
B.C.A	UCCAY20	Project Work	Students have to do project throughout the semester in any application to gain practical knowledge	Emulate positive social values and exercise leadership qualities and team work.	Ability to work as a member or leader in diverse teams in multidisciplinary environment. And identify opportunities, entrepreneurship vision and use of innovative ideas to create value and wealth for the betterment of the individual and society.	An ability to understand the social and ethical implications of working as a professional in the field of computer science. An ability to use current tools and methodologies in computing practice.
B.C.A	USCSG620	Skill-Based Elective VI: Data Analytics Using Data Visualization Tools	To Understand the different data format and its graphical representation	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Ability to analyze social and environmental aspects with professional values, ethics and equity to transform the knowledge, skills and expertise to the	Design effective data visualizations in order to provide new insights into a research question or communicate information to the viewer. Find and select appropriate data

					community.	that can be used in order to create a visualization that answers a particular research question. . Understand how Cultures of Practice influence the way data may be collected, described, or formatted in order to align their own data management practices with those of their discipline. Find and save data to IU-supported research storage for both short- and long-term preservation in order to comply with data management mandates. . Properly document and organize data and visualizations in order to prepare them for

						reuse.
B.C.A	UGCSA520/ UGCSA620	NME: Statistical Package for Social Science	To Understand how to start SPSS, define a variety of statistical variables, enter basic data into SPSS, carry out a statistical analysis that can test hypotheses.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking government organizations, faculty for computer science and applications in educating institutions.	Be familiar with basic SPSS functions and its tools. These functions and tools will enable students to proficiently open and create SPSS data files. Presenting data using SPSS generated graphs and summary statistics: descriptive statistics. Conducting independent and paired samples t-tests to compare two groups. Conducting a one-way ANOVA to compare more than two groups where the test variable is collected on a continuous scale and the data in each group follows the normal

						distribution: One-way ANOVA. Analyzing data when normality assumption for data does not hold, i.e., the data does not follow the normal distribution. The statistical methods to analyze such data are collectively known as Nonparametric methods or distribution free method: non-parametric tests.
B.C.A	UGCSB520/ UGCSB620	NME: Web Designing Using Dreamweaver	To train the students in building quality websites.	Emulate positive social values and exercise leadership qualities and team work.	Become proficient and ensure job in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies, undertaking	Create web pages using predesigned layouts Add text, images, and other elements to your pages. Add text, images, and other elements to your pages Create and use HTML tables Use CSS to apply styles to

					government organizations, faculty for computer science and applications in educating institutions.	your pages and site, and also to create interactive features. . Add forms to your web pages
B.Com	USCOA120 / USCOA220	Consumer Awareness	Learn ways and means in safeguarding the rights of consumers	Life Long Learning recognize the need for and have the ability to engage in lifelong learning process to cope up with the emerging trends in social, cultural, economic and technological changes	Addressing the needs of the nation cater to the needs of the society so as to contribute for the development of the nation	Students gained conceptual knowledge on the social responsibilities of the consumers
B.Com	UCCOF20	Principles of Cost Accounting	To assist management in decision making.	Function effectively as an individual and as a member or leader in teams strengthening group dynamics to achieve the common goals of the organizations.	Succeed in obtaining employment appropriate to their interest in related fields and make a positive contribution in public practice, government, commerce and industry.	Understand the ideas of costing, retrieving the concept to prepare tenders & Quotations.

B.Com	UCCOG20	Law of Contract I	theoretical knowledge on legality of contract.	Excel as a socially committed individual having empathy for the needs of the society through value-based education.	develop in their professional career through lifelong learning and excel as the fellow associates in the field of company secretaryship, chartered accountancy and business administration.	Gained thorough knowledge in the performance of a contract.
B.Com	UECOA20	Principles of Management	Learn the concept and understand the principles and managerial skills.	Excel as a socially committed individual having empathy for the needs of the society through value-based education.	Apply ethical principles in promoting values and attitudes and become responsible towards the practice of accounting norms.	To become versatile in coordinating and developing the skill of effective communication
B.Com	UCCOK20	Marketing	Understand the various methods of channels of distribution and familiarize with latest Technologies.	Function effectively as an individual and as a member or leader in teams strengthening group dynamics to achieve the common	Exercise leadership qualities and moral values through ethical ways with the concern for the society and the environment with	To understand the dynamics of marketing and to know about latest trends in marketing

				goals of the organizations.	team spirit to adapt to change throughout their professional career.	
B.Com	UECOC520	Banking: Law and Practice	Gain in-depth knowledge in the modern technologies for making payments and other technological services	Excel as a socially committed individual having empathy for the needs of the society through value-based education.	Apply ethical principles in promoting values and attitudes and become responsible towards the practice of accounting norms.	To update the regulations and technological implementation in modern scenario.
B.Sc. Biochemistry	UCBCA20	Bioorganic Chemistry	To provide a clear note on the bioorganic compounds.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Assess the structural features of genetic material.
B.Sc. Biochemistry	UCBCC20	Main Practical-I	To provide a wide practical knowledge on Qualitative and Quantitative Analysis.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Apply the safety rules in the laboratory
B.Sc. Biochemistry	UCBCB20	Cell Biology	To provide a deep knowledge about cell – the basic unit of life.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Identify the type of cell division processes and its significance

B.Sc. Biochemistry	UCBCD20	Biochemical techniques	To study about the principles and applications of biochemical techniques.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Compare the difference between various methods of chromatography
B.Sc. Biochemistry	UCBCE20	Physiology and Nutrition	To understand the homeostatic mechanism of each organ.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Identify the nutrients in food and their functions in maintaining health
B.Sc. Biochemistry	UCBCF20	Main Practical-II	To inculcate practical skill in biochemistry.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Explain the basic principles involved in isolation of bio molecules from various source
B.Sc. Biochemistry	USBCBn20	Skill Based Elective: Health Care for Women	To provide awareness about common health problems of women and how to overcome certain diseases	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Understand the common health problems of women
B.Sc. Biochemistry	UCBCG20	Enzymes & Intermediary metabolism	To impart knowledge about the enzymes and the metabolism of biomolecules and its interrelationship.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Describe the properties, hypothesis and IUB classification of enzymes

B.Sc. Biochemistry	UCBCH20	Endocrinology	Endocrinology describes in detail the role of endocrine glands, their secretion and its regulatory effect on metabolic activities to maintain homeostasis.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Analyze the clinical disorders of hormones
B.Sc. Biochemistry	UEBCA20	Elective IA: Immunology	To help the students to understand the components of Immune system	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Compare the spectrum of autoimmune diseases
B.Sc. Biochemistry	UEBCB20	Elective IB: Environmental Toxicology	To understand the basics in toxicological aspects that effect the environment.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Compare and interpret the results of occupational exposure assessments within the context of safety assessments
B.Sc. Biochemistry	UCBCJ20	Main Practical-III	The course is aimed to enhance the practical skill of the student in handling and estimating the components present in the biological samples.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Predict the biochemical laboratory analysis

B.Sc. Biochemistry	UCBCK20	Main Practical-IV	The course is aimed to enhance the practical skill of the student in handling and estimating the components present in the biological samples.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	To obtain practical skills in basic hematological techniques.
B.Sc. Biochemistry	USBCCn20	Skill Based Elective: III: Entrepreneurial Biochemistry	To understand the concept of entrepreneurship	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Re-construct and build a mindset focusing on unique approach to market opportunities
B.Sc. Biochemistry	UCBCI20	Molecular Biology	To make a study on life and the information centers called genes.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Analyze the blueprint of life
B.Sc. Biochemistry	UEBCC20	Elective IIA: Clinical Biochemistry	To understand the biochemical basis of various diseases and disorders	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Compare the application of diagnostic enzymes
B.Sc. Biochemistry	UEBCD20	Elective IIB: Pharmacology	To make detailed study of drugs, and their actions on living systems	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Compare the structure and uses of antibiotics available

B.Sc. Biochemistry	UEBCE20	Elective IIIA: Biotechnology	To explore the applications and future potential of Biotechnology	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Identify and debate the ethical and social issues in the field of biotechnology and get insight in application of rDNA technology
B.Sc. Biochemistry	UEBCF20	Elective IIIB: Plant Biochemistry	To explore the applications of plant and their products	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Create the impact of nitrogen, Sulphur and carbon cycle on nature
B.Sc. Biochemistry	USBCDn20	Skill Based Elective: IV- Medical Laboratory Technology	To make detailed study of the organization and functions of a laboratory	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Apply histopathological techniques in detecting abnormal cells
B.Sc. Biochemistry	USBCAn20	Skill Based Elective: II - Nutritional Biochemistry	To make a note on nutrients and its role on metabolism.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Use a balanced diet for diseased conditions
B.Sc. Biochemistry	UABCA20	Allied Biochemistry - I	To acquire knowledge on the structure and the function of biomolecules	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	List out the structural components, properties and biological importance of nucleic acids.

B.Sc. Biochemistry	UABCB20	Allied Biochemistry - II	To understand the basic of metabolic pathway	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Gain knowledge of intermediary metabolism and regulation of individual metabolism
B.Sc. Biochemistry	UABCC20	Allied Biochemistry Practical	To acquire knowledge on the structure and the function of biomolecules	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Understand the various identification tests for carbohydrates
B.Sc. Biochemistry	UGBCAn20	NME: Disease and Treatment	To provide a basic knowledge about common diseases and its treatment.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Acquire a broad knowledge about the deadliest diseases in the world
B.Sc. Biochemistry	UCBCBn20	NME: Therapeutic Agents	To impart knowledge on action of drugs in treating diseases.	Emulate positive social values and exercise leadership qualities and team work.	Attain skills to tackle issues and apply knowledge to find solutions for the problem	Acquire knowledge on the medicinal therapy for various health conditions and function of medicinal plants as therapeutics

B.Sc. Chemistry	UCCHA20	General Chemistry – I	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Recall and understand the concepts of valency, oxidation and reduction, classify the elements in the periodic table and explain the periodicity of properties. Recall the concepts and theories of acid - base, buffer solutions, understand the principle of inorganic qualitative analysis and apply it in practical’s. Apply IUPAC nomenclature in naming organic compounds and the concept of hybridization to identify the geometry and shape of the simple organic molecules. Analyze and apply

						the concepts of liquid and gaseous states. Recall the concepts of classical and quantum mechanics and solve related problems.
B.Sc. Chemistry	UCCHC20	Practical - I: Inorganic Qualitative Analysis	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Recall the principles of inorganic qualitative analysis. Apply the concepts of semimicro analysis in inorganic qualitative analysis. Develop skill to analyze systematically the given inorganic mixture and identify the acid and basic radicals. Understand the importance of eliminating the interfering radical. Eliminate the interfering acid radical for group separation

						and identification of basic radicals.
B.Sc. Chemistry	UCCHB20	General Chemistry – II	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Illustrate the different types of bonds with examples and apply the knowledge of VSEPR theory to determine geometries of molecules. Interpret the molecular orbital theory of homo and hetero nuclear diatomic molecules, compare the chemical and physical properties of alkali metals and their compounds and understand the chemistry of lithium. Analyse and apply the electronic displacement effects, reactions, generation, structure and stability of reaction

						intermediates. Examine and analyze the reactions and mechanisms of alkanes, alkenes, dienes and alkynes. Analyze the laws and concepts of ideal and non-ideal solutions, mesomorphic and colloidal states.
B.Sc. Chemistry	UCCHC20	Practical - I: Inorganic Qualitative Analysis	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Recall the principles of inorganic qualitative analysis. Apply the concepts of semimicro analysis in inorganic qualitative analysis. Develop skill to analyze systematically the given inorganic mixture and identify the acid and basic radicals. Understand the importance of eliminating the

						interfering radical. Eliminate the interfering acid radical for group separation and identification of basic radicals.
B.Sc. Chemistry	UCCHD20	General Chemistry – III	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Define and calculate equivalent weights and concentration terms and explain the principles of volumetric analysis, and illustrate the theories of different types of titrations and indicators. Discuss the trend in periodicity of Beryllium, Boron and Carbon family elements and their compounds. Describe the methods of preparation and properties of cycloalkanes,

						dicarboxylic acids and carbonyl compounds, and apply the concept of acidity and acid strength of carboxylic acids. Describe the methods of preparation and properties of alcohols, ethers and epoxides. Elaborate the basic concepts of solid-state chemistry including solid state defects and semiconductors.
B.Sc. Chemistry	UCCHF20	Practical – II: Volumetric Estimation	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry,	Use double titration method in volumetric analysis. Prepare standard solutions. Apply volumetric principles to carry out acid-base titrations, complexometric titrations, precipitation titration and redox titrations

					Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	like permanganometric, dichrometry and iodometric titrations.
B.Sc. Chemistry	USCHA320	Skill Based Elective – III Industrial Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Discuss the composition, characteristics and manufacture of various industrial products. (Polymer, Leather, Textile, Glass, Ceramics, Cements, Paints and Pigments). Explain the various process involved in the manufacture of leathers and leather products. Describe the importance of natural and synthetic fibers in textile industry. Understand the classifications of fuels and learn the common

						terms related to it. Understand how to implement the concepts in industrial working environment.
B.Sc. Chemistry	UCCHE20	General Chemistry – IV	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Explain the periodic properties of Nitrogen, Oxygen and Halogen family elements and their compounds, and reason out the position of noble gases in the periodic table and describe the preparation and properties of xenon compounds. Illustrate the mechanisms of aliphatic, aromatic nucleophilic substitution and elimination reactions. Recall and apply Huckel's rule, illustrate the preparation, properties and uses of

						heterocyclic compounds, dihydric and trihydric phenols, and related named reactions. Define the terms involved in thermodynamics, the laws of thermodynamics and their developments. Describe the concept of entropy and calculate the entropy changes during various processes, and to explain the third law of thermodynamics and its applications.
B.Sc. Chemistry	UCCHF20	Practical – II: Volumetric Estimation	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry,	Use double titration method in volumetric analysis. Prepare standard solutions. Apply volumetric principles to carry out acid-base titrations,

					Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	complexometric titrations, precipitation titration and redox titrations like permanganometric, micrometry and iodometric titrations.
B.Sc. Chemistry	USCHB420	Skill Based Elective – IV Agricultural chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Understand the scope of agriculture in India and Tamil Nadu. Explain the physical and chemical properties of soil. Describe the types of farming. Summarize the certification of organic products. Identify the benefits and adverse effects of pesticides.

B.Sc. Chemistry	UCCHG20	Inorganic Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Discuss the general characteristics of d and f block elements, and compare the properties of elements belonging to Ti, V, Cr, Mn and Fe groups. Summarize the various steps involved in metallurgical processes, and illustrate the preparation, properties and uses of Ti, Zr, U, Pt and Th. Recall the basic concepts of nuclear chemistry, and to explain the stability of nuclides by n/p ratio, mass defect and binding energy, packing fraction, magic numbers and natural radioactivity. Explain nuclear transmutation

						reactions, artificial radioactivity, nuclear fission and fusion reactions. Describe the biological importance of certain elements, chelate therapy, radio pharmaceuticals, contrast agents and toxicity of few metals.
B.Sc. Chemistry	UCCHH20	Organic Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Remember the concepts of stereoisomerism and apply it in identifying the configurations of the optical and geometrical isomers. Illustrate tautomerism and conformational analysis. Explain the preparation and synthetic uses of active methylene compounds, basic concepts of organic

						photochemistry and illustrate organic photochemical reactions. Apply the knowledge of various named reactions in organic synthesis. Summarize the different types of molecular rearrangements their mechanisms and applications.
B.Sc. Chemistry	UCCHI20	Physical Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical	Demonstrate the plausible mechanisms based on the study of the kinetics of chemical reactions. Describe the theories developed to understand the reaction kinetics of simple and complex reactions. Explain the basic principles of photo

					Chemistry, Food Chemistry and Small Scale Chemistry.	chemistry, deduce rate laws of photochemical reactions and discuss the applications of photo physical processes. Apply Phase rule to study one component and two component systems and interpret phase diagrams. Apply the knowledge gained about catalysis and adsorption to deduce the kinetics of homogeneous and heterogeneous surface reactions.
B.Sc. Chemistry	UECHA20	Elective - I A: Analytical Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry,	Summarize the various steps involved in gravimetric analysis. Demonstrate the principles and techniques involved in paper, column, TLC and ion exchange

					Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	chromatography and their applications. Explain the absorption laws, instrumentation and working of UV-Visible spectrophotometers. Elaborate the principle, instrumentation of IR spectroscopy for the identification of simple organic molecules. Explain the principle involved in NMR and interpret NMR spectra of simple organic compounds, describe the principle, instrumentation of Mass spectroscopy and determine the molecular formulae of simple organic molecules.

B.Sc. Chemistry	UECHB20	Elective - I B: Basics of Computer Programming in C and its Applications in Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Define and relate software and hardware. Describe the various components of C language. Demonstrate the uses of functions, arrays and pointers. Apply C language for solving problems in chemistry. Apply C language to calculate specific terms in Chemistry.
B.Sc. Chemistry	UCCHL20	Practical - III: Physical Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical	Demonstrate practical skills in carrying out chemical reactions of different orders to arrive at reaction kinetics. Estimate quantitatively using conductometric and potentiometric titrations

					Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Assess the meaning of values and calculations in experiments and learn the techniques of getting rate constants through graphical methods. Understand laboratory practices and safety/First aid rules. Handle electronic equipment's with technical skills
B.Sc. Chemistry	UCCHM20	Practical - IV: Gravimetric Estimation	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical	Quantitatively estimate metal ions using gravimetric analysis. Gain knowledge on the choice of precipitating methods, reagents, crucibles and filtration. Identify common errors in gravimetric analysis. Outline the favorable

					Chemistry, Food Chemistry and Small Scale Chemistry.	conditions for precipitation and factors affecting the particle size of the precipitate. Relate particle size of the precipitates with choice of crucibles used in gravimetric estimations.
B.Sc. Chemistry	UCCHN20	Practical - V: Organic Analysis and Preparation	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Apply the concepts of micro scale analysis in organic qualitative analysis. Develop skill to analyse systematically the given organic mixture and identify the functional group and special elements. Prepare simple organic compounds. Discuss the importance of laboratory practices and safety/First aid

						rules for handling the organic chemicals. Explain the significance of organic reactions to understand the theory concepts of organic chemistry.
B.Sc. Chemistry	USCHC520	SBE – V: Small Scale Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Understand the laws, role and steps involved in starting small scale industries.Acquire skills to prepare soaps and detergents.Describe the characteristics and uses of cosmetics and perfumes.Gain skills in the manufacture of selected small-scale products.

B.Sc. Chemistry	UCCHJ20	Coordination Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Define the terms involved in coordination chemistry and recall IUPAC nomenclature of coordination compounds and to explain the concept of chelation and illustrate the isomerism exhibited by coordination complexes. Explain and compare Werner, Sidgwick and Valence Bond theories of bonding in coordination compounds. Describe the various aspects of Crystal Field Theory and its applications. Explain the importance of MOT, construct molecular

						orbital diagrams and to compare MOT with CFT. Describe the synthesis, properties, uses, bonding, hybridization and structures of carbonyls of Ni, Cr, Fe, Co, Mn, Mo and W.
B.Sc. Chemistry	UCCHK20	Electro Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Apply the laws on electrolysis and definitions of specific, equivalent and molar conductance to the working of electrolytic cells. Illustrate Debye Huckel's theory of strong electrolytes. Explain the use of electrical energy in bringing about chemical reactions and how chemical reactions can produce electrical energy so

						has to design cells and batteries. Apply chemical cells and concentration cells for determining the valency of mercurous ion, transport number, solubility and solubility product. Demonstrate the knowledge gained in the study of irreversible electrode processes. And illustrate the principle and applications of fuel cells.
B.Sc. Chemistry	UECHC20	Elective II A: Chemistry of Natural Products	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry,	Explain the structural elucidation, properties and reactions of glucose, fructose, sucrose, maltose, starch and cellulose. Elaborate the preparation, properties and reactions of alpha

					Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	amino acids, synthesis of peptides and classification and structure of proteins. Explain the structure and applications DNA, RNA and processes like transcription and translation in protein synthesis. Illustrate the sources, properties and structural elucidation of alkaloids and terpenoids. Elaborate the sources, properties, structural elucidation and synthesis of flavonoids, carotenoids, anthocyanins and vitamins.

B.Sc. Chemistry	UECHD20	Elective - II B: Polymer Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Classify polymers and determine the molecular weights of polymers by physical and chemical methods. Describe the mechanisms of different types of polymerization reactions. Summarize the types and techniques involved in polymer degradation. Demonstrate the applications of industrial polymers and explain the role of conducting polymers. Illustrate the various polymer processing techniques.

B.Sc. Chemistry	UECHE20	Elective - III A: Applied Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Describe the digestion and absorption of carbohydrates, proteins and fats and describe the role of enzymes and physiological functions of hormones. Recall the definition, constituents and physio-chemical properties of milk and indicate the composition of creams, butter, ghee and ice creams. Demonstrate the chief processes involved in leather manufacture and treatment of tannery effluents Classify and enumerate the properties of soils. Determine the

						physico-chemical properties of water and illustrate reverse osmosis and ion-exchange methods.
B.Sc. Chemistry	UECHF20	Elective - III B: Pharmaceutical Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Explain the basic pharmacological terms are used in pharmaceutical chemistry. Illustrate the selected Indian Medicinal plants and their uses. Elaborate the definition, properties and therapeutic uses of sulphonamides, antibiotics, antiseptics and disinfectants. Explain the role of analgesics and anesthetics. Analyse the causes, symptoms and drugs used for the treatment of Cancer, AIDS, Epilepsy and

						Hypertension Summarize the characteristics and classifications of cardiovascular drugs. Identify the common organic pharmaceutical aids.
B.Sc. Chemistry	UCCHL20	Practical - III: Physical Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Demonstrate practical skills in carrying out chemical reactions of different orders to arrive at reaction kinetics. Estimate quantitatively using conductometric and potentiometric titrations Assess the meaning of values and calculations in experiments and learn the techniques of getting rate constants through graphical methods.

						Understand laboratory practices and safety/First aid rules. Handle electronic equipment's with technical skills
B.Sc. Chemistry	UCCHM20	Practical - IV: Gravimetric Estimation	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Quantitatively estimate metal ions using gravimetric analysis. Gain knowledge on the choice of precipitating methods, reagents, crucibles and filtration. Identify common errors in gravimetric analysis. Outline the favorable conditions for precipitation and factors affecting the particle size of the precipitate. Relate particle size of the precipitates with choice of crucibles

						used in gravimetric estimations.
B.Sc. Chemistry	UCCHN20	Practical - V: Micro Scale Organic Analysis and Preparation	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Apply the concepts of micro scale analysis in organic qualitative analysis. Develop skill to analyse systematically the given organic mixture and identify the functional group and special elements. Prepare simple organic compounds. Discuss the importance of laboratory practices and safety/First aid rules for handling the organic chemicals. Explain the significance of organic reactions to understand the theory concepts of organic chemistry.

B.Sc. Chemistry	USCHD620	SBE – VI: Food Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Apply simple analytical techniques for detecting food adulterants. Describe the role of food additives, preservatives, flavors, colors and antioxidants. Detect food poisons and apply first aid techniques. Distinguish between alcoholic and nonalcoholic beverages. Describe the importance of saturated and unsaturated fats in edible oils and the nutritive value of fruits and vegetables.
B.Sc. Chemistry	UGCHA520 /620	Food and Nutrition Chemistry	Our curriculum meets the global requirements and enables students to pursue higher studies in	Attain knowledge and understand the principles and concepts in the	Demonstrate a firm foundation in fundamentals and gain an in depth	Explain the sources, classification, functions, deficiency diseases and

			educational institutions abroad.	respective discipline.	knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	metabolism of carbohydrates.Explain the sources, classification, functions, deficiency diseases and metabolism of proteins and fats.Outline the sources, functions and deficiency diseases of fat soluble and water soluble vitamins.Describe the sources, functions, and deficiency diseases and RDA of essential and trace minerals. Appreciate the nutritive values and evaluate the chemical changes and loss of nutrients during cooking and storage of fruits and vegetables.
B.Sc. Chemistry	UGCHB520	Cosmetics and	Our curriculum meets the	Attain knowledge	Demonstrate a firm	Define and classify

	/620	Dyes	global requirements and enables students to pursue higher studies in educational institutions abroad.	and understand the principles and concepts in the respective discipline.	foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	cosmetics, deodorants, antiperspirants, perfumes, aerosols and identify the pros and cons of synthetic cosmetics. Describe the safety assessment methods used by FDA. Prepare and use fruits and vegetables based herbal cosmetics and evaluate the significance of aromatherapy and apply it to human health and beauty. Explain the properties of natural and synthetic dyes. Understand the impact of dyes used in textile and leather industry to environmental pollution and analyse the importance of dyes in pharmaceutical and

						food industry.
B.Sc. Chemistry	UACHA20	Allied Chemistry I	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Understand and apply the concept of aromaticity, mechanism of electrophilic substitution reaction, and chemistry of heterocyclic compounds. Explain the terms involved in kinetics and methods of determination of order of the reaction, and understand the theories of reaction rates. Classify polymers and explain its preparation, properties and uses. Understand the concepts, types of chromatographic techniques, principles of volumetric analysis,

						and describe the separation and purification techniques. Understand the composition and uses of fuel gases, cement, glass, explosives and dyes.
B.Sc. Chemistry	UACHB20	Allied Chemistry II	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Understand the nomenclature and theories of coordination compounds. Understand the concepts of isomerism and tautomerism. Explain the concepts of electrolytes and its types, buffer solutions, separation techniques, and construction of electrochemical cell. Understand the basic principles of photochemistry and

						kinetics of hydrogen-chlorine reaction. Recall the basic terms in medicinal chemistry, and discuss the causes, symptoms and treatment of cancer, diabetes and AIDS.
B.Sc. Chemistry	UACHC20	Allied Chemistry Practicals II	Our curriculum meets the global requirements and enables students to pursue higher studies in educational institutions abroad.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate a firm foundation in fundamentals and gain an in depth knowledge in different fields of Chemistry such as Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Food Chemistry and Small Scale Chemistry.	Acquire skills in acid-base titrations. Acquire skill in Permanganates Acquire skill in determining hardness of water Analyse the elements present in organic compounds. Analyse the functional groups present in organic compounds

B.Sc. Computer Science	UCCSH20	Windows Programming with VB.NET	To understand the concepts of Windows Programming.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Demonstrate the knowledge on appropriate theory, practices and tools for the specification, design and implementation.	Explain the concepts of windows programming.
B.Sc. Computer Science	UCCSJ20	Operating System	To analyze, processes, resource control (concurrency etc.), physical and virtual memory, scheduling, I/O.	Attain knowledge and understand the principles and concepts in the respective discipline.	Understand the basic concepts of system software, hardware and evolution of computer graphics.	Acquire the Knowledge of important computer system resources and the role of operating system in their management policies and algorithms.
B.Sc. Computer Science	UCCSK20	Practical-VI : Linux	To provide the skills in Linux Shell Script.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Demonstrate the knowledge on appropriate theory, practices and tools for the specification, design and implementation.	Obtain a foundation for an advanced course in operating systems.
B.Sc. Computer Science	UCCSL20	Practical-VII : Python Programming	To Implement Object Oriented Programming concepts in Python	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Demonstrate the knowledge on appropriate theory, practices and tools for the specification,	Develop real-world applications using oops, files and exception handling provided by python.

					design and implementation.	
B.Sc. Computer Science	UCCSM20	Relational Database Management Systems	The objective of this course is to expose the students to the fundamentals and basic concepts in relational Data Base Management Systems	Attain knowledge and understand the principles and concepts in the respective discipline.	Utilize the practical skill to examine, plan and engineer the applications of technology using computing tools and techniques.	Apply the SQL commands to create tables and Triggers, insert/update/delete data, and query data in a relational DBMS.
B.Sc. Computer Science	UCCSN20	.NET Programming in C#	Understand code solutions and compile C# projects within the .NET framework.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Utilize the practical skill to examine, plan and engineer the applications of technology using computing tools and techniques.	Create Windows Applications and Web - based Applications
B.Sc. Computer Science	UECSB20	Elective-I B : Data Mining	To understand expose to various Data Mining techniques.	Attain knowledge and understand the principles and concepts in the respective discipline.	Ability to attain knowledge and understand the mathematical and logical concepts, algorithmic principles and computer fundamentals.	Understand Data Warehouse fundamentals and Data Mining Principles

B.Sc. Computer Science	UCCSP20	Practical-VIII : RDBMS	The objective of this course is to expose the students to the fundamentals and basic concepts in relational Data Base Management Systems.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Demonstrate the knowledge on appropriate theory, practices and tools for the specification, design and implementation.	Understand, Appreciate and effectively explain the underlying concepts of Database technologies. Programming PL/SQL including stored procedures, stored functions, cursors, package.
B.Sc. Computer Science	UCCSQ20	Practical-IX : .NET Programming in C#	Understand code solutions and compile C# projects within the .NET framework.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Demonstrate the knowledge on appropriate theory, practices and tools for the specification, design and implementation.	Utilize the practical skill to examine, plan and engineer the applications of technology using computing tools and techniques.
B.Sc. Computer Science	UCCSR20	Internet and Web Programming	Enhance the programming experience with the help of tools like editors and debuggers that makes JavaScript coding easier and more interactive	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Demonstrate the knowledge on appropriate theory, practices and tools for the specification, design and implementation.	Build dynamic web pages using JavaScript (Client Side Programming) and apply their knowledge to create interactive websites.

B.Sc. Computer Science	UCCSS20	Cloud Computing	Understand the concepts of cloud computing technologies.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Apply the recent technology in multidisciplinary domains and evaluate the methods to implement it, to create high level design and implement robust software applications using latest technological skills.	Understand and familiar with the deployment models.
B.Sc. Computer Science	UECSD20	Elective-II B : Data Science	Understand the key concepts of data science and its applications.	Attain knowledge and understand the principles and concepts in the respective discipline.	Understand the basic concepts of system software, hardware and evolution of computer graphics.	Understand the key concepts in data science, its applications and the toolkit used by data scientists.
B.Sc. Computer Science	UECSE20	Elective-III A : Artificial Intelligence	Become familiar with basic principles of AI toward problem solving inference, perception, knowledge representation, and learning.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Utilize the practical skill to examine, plan and engineer the applications of technology using computing tools and techniques.	Understand different types of AI Agents and its Environments

B.Sc. Computer Science	UCCST20	Practical-X : Internet and Web Programming	Build a simple, yet functional web application using PHP/MySQL.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Demonstrate the knowledge on appropriate theory, practices and tools for the specification, design and implementation.	Create PHP programs that use various PHP library functions, and that manipulate files and directories.
B.Sc. Mathematics	UCMAA20	Algebra and Trigonometry	Course is designed to improve problem solving skills in Algebra and Trigonometry.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills.	Capability to solve problems in computer graphics using concepts of linear algebra. Ability to provide new solutions using the domain knowledge of mathematics.	Perceive the fundamental concepts in the theory of equations. Solve various types of higher order equations. Know about matrices and their applications. Solve problems involving trigonometric functions. Analyse and relate hyperbolic and circular functions.

B.Sc. Mathematics	UCMAB20	Calculus	Course is designed to introduce the basic properties of integrals, understand the concepts of multiple integration and improve the analytical skills	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills.	Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programmer of study. Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Ability to analyze the results and apply them in various problems appearing in different branches of mathematics.	Calculate the radius of curvature, center of curvature, Evolutes and Involutes. Understand and find the asymptotes of rational curves. Determine the area and volume by applying the technique of double and triple integrals. Determine and use various techniques to solve the variety of integration problems. Evaluate beta and gamma functions and apply beta and gamma functions in double and triple integrals.

B.Sc. Mathematics	UCMAC20	Vector Analysis and Fourier Series	Course is designed to understand the fundamental concepts of vector analysis and apply the various techniques of vector integration in solving volume and surface integrals; and also to define Fourier series and express periodic functions as infinite series	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations. Ability to use mathematics as a precise language of communication in other branches of	Compute divergence, curl, directional derivatives and Gradients. Calculate the unit normal and tangent to the surface. Evaluate line integrals, surface integrals and volume integrals using vector integration. Verify and Apply Green’s Theorem, Gauss divergence Theorem, Stoke’s Theorem. Understand the nature of the Fourier series and find the Fourier coefficients.

					human knowledge and communicate long standing unsolved problems in mathematics. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Problem solving Capability to solve problems in computer graphics using concepts of linear algebra. Ability to provide new solutions using the domain knowledge of mathematics.	

B.Sc. Mathematics	UCMAD20	Differential Equations and Laplace Transforms	Course is designed to improve problem solving skills in Differential Equations and Laplace Transforms and To expose students to different techniques of finding solution to these equations.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Disciplinary knowledgeCapability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skillsi. Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations.iii. Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the	Solve the standard forms of first order differential equations. Solve the second order differential equations with constant coefficients and variable coefficients. Find the complete, singular and general integral of PDE. Analyze the properties of Laplace Transforms. Solve differential equations using Laplace Transforms.

					civilization.iv. Ability to explain the development of mathematics in the civilizational context and itsrole as queen of all sciences.Problem solvingiii. Ability to solve linear system of equations, linear programming problems and network flow problems.iv. Ability to provide new solutions using the domain knowledge of mathematics.	
B.Sc. Mathematics	UCMAE20	Solid Geometry	To understand and deepen the knowledge related to three-dimensional Analytical Solid Geometry	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking,	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or	The learners will be able to Comprehend the basic concepts of plane and find the equation of a plane under given conditions. Understand the basic

				and problem solving skills. Effectively communicate general and discipline-specific information, ideas and opinions. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations. Ability to use mathematics as a precise language of communication in other branches of human knowledge and communicate long standing unsolved problems in mathematics. Critical thinking Ability to employ critical thinking in	concepts of straight line and skew lines and also find the equation of a straight line under given conditions, find the length and equations of the shortest distance between two skew lines. Understand the basic concepts of sphere and find the equation of a sphere under given conditions. Familiarize with cone, right circular cone, enveloping cone and reciprocal cone and also find the respective equations under given conditions. Familiarize with cylinder, enveloping cylinder and right circular cylinder and

					understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics. Problem-solving Ability to provide new solutions using the domain knowledge of mathematics.	also find the respective equations under given conditions.
B.Sc. Mathematics	UCMAF20	Statics	To enhance the ability of learners to apply the knowledge and skills acquired by them during the course to solve specific theoretical and applied problems in Statics.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills.	: Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing	Familiarize with subject matter, which has been the single center, to which mathematicians, physicists, astronomers, and engineers were drawn together.

					in different branches of mathematics. Problem solving Ability to provide new solutions using the domain knowledge of mathematics.	Understand necessary conditions for the equilibrium of particles acted upon by various forces and learn the principle of virtual work for a system of coplanar forces acting on a rigid body. Understand the reduction of force system to a resultant force acting at a base point and a resultant couple, which is independent of the choice of base of reduction. Understand static friction that exists between a stationary object and the surface on which it is resting and apply the knowledge and skills to solve specific

						theoretical and applied problems. Construct center of gravity of some materialistic systems.
B.Sc. Mathematics	UAMSA20	Mathematical Statistics-I	Course is designed to study Statistics from a purely mathematical standpoint using Probability theory as well as other branches of Mathematics and to recognize the fundamental meanings of correlation and regression.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions. Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society. Pursue higher knowledge,	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations.	Comprehend the fundamentals of probability. Know about random variables of one and two dimensions. Learn about the measures of central tendency and concepts of moments. Acquire knowledge about discrete and continuous distributions. Apply correlation and regression for the investigation of relationship between the variables

				qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Problem solving Ability to provide new solutions using the domain knowledge of mathematics.	
B.Sc. Mathematics	UCMAG20	Operations Research	To apply problem solving skills to real life situations. To develop logical and analytical skills.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of	The learners will be able to Translate the real-world problems into linear programming

				analytical, critical and creative thinking, and problem solving skills. Effectively communicate general and discipline-specific information, ideas and opinions. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations. Ability to use mathematics as a precise language of communication in other branches of human knowledge and communicate long standing unsolved problems in mathematics. : Critical thinking	problems and obtain solutions. Apply the transportation problem techniques for the optimization of cost. Solve the assignment problem which deals with the allocation of various sources to various destinations on one-to-one basis. Find the optimum strategies of the players and the value of the 2-person games. Perform network planning using PERT & CPM techniques which provide a methodology for planning and controlling of a project.

					Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics. Problem-solving iii. Ability to solve linear system of equations, linear programming problems and network flow problems. Ability to provide new solutions using the domain knowledge of mathematics.	

B.Sc. Mathematics	UCMAH20	Dynamics	To enhance the ability of learners to apply the knowledge and skills acquired by them during the course to solve specific theoretical and applied problems in Dynamics.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions. Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society. Emulate positive social values and exercise leadership qualities and team work.	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations. Ability to use mathematics as a precise language of communication in other branches of	Familiarize with subject matter, which has been the single center, to which mathematicians, physicists, astronomers, and engineers were drawn together. Understand behavior of motion of objects. Understand simple harmonic motion and projectiles. Express the effects of impact of spheres. Demonstrate methods to locate central orbits. Apply the knowledge and skills to solve specific theoretical and applied problems

				Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society	human knowledge and communicate long standing unsolved problems in mathematics. Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the	

					results and apply them in various problems appearing in different branches of mathematics. Problem solving Capability to solve problems in computer graphics using concepts of linear algebra. Capability to solve various models such as growth and decay models, radioactive decay model, drug assimilation, LCR circuits and population models using techniques of differential equations. Ability to solve linear system of equations, linear programming problems and	

					network flow problems. iv. Ability to provide new solutions using the domain knowledge of mathematics.	
B.Sc. Mathematics	UAMSB20	Mathematical Statistics-II	Course is deigned to study the concept of likelihood and derive the likelihood and associated functions of interest for simple models, To construct confidence intervals for unknown parameters and To demonstrate understanding of how to design experiments and surveys for efficiency.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions. Appreciate biodiversity and enhance eco-consciousness for sustainable development of the	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their	Know the basic concepts of some advanced distributions. Apply estimation theory to estimate the values of parameters. Use appropriate sampling distributions for testing of hypothesis. Apply chi-square test to find out the significant difference between expected and observed frequencies in one or more categories. Use F-test to compare statistical model that

				society. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	geometrical visualizations. Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Problem solving Ability to provide new solutions using the domain knowledge of mathematics.	has been fitted to a data that best fits the population from which the data was sampled.

B.Sc. Mathematics	UCMAI20	Abstract Algebra	To enable understanding of fundamental algebraic structures	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills. Effectively communicate general and discipline-specific information, ideas and opinions. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations. . Ability to use mathematics as a precise language of communication in other branches of	The learners will be able to Understand the concepts of groups and sub groups. Know about normal subgroups, quotient groups, homomorphisms and isomorphisms. Understand the concepts of automorphisms for constructing new groups from the given groups. Have knowledge on concepts of ring theory. Understand the concepts of maximal ideals, Euclidean rings and particular integral domain.

					human knowledge and communicate long standing unsolved problems in mathematics. : Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics. Problem-solving Ability to provide new solutions using the domain knowledge of mathematics.	

B.Sc. Mathematics	UCMAJ20	Real Analysis – I	Course is designed to familiarize the students to concepts of sequences, limits of sequences, limits of functions and continuity and to introduce the concepts of convergent, divergent and bounded sets.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions.	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its	Know the basic properties of the real line and real number system. Understand the fundamentals of sequences and to calculate their limits. Recognize the arithmetic properties of convergence and divergence of sequence and series. Learn the properties of metric space and its type. Know about continuous function and its reformulation.

					role as queen of all sciences. Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics.	
B.Sc. Mathematics	UCMAK20	Complex Analysis	Course is designed to introduce the fundamental ideas of the functions of complex variable and to impart the basic knowledge of holomorphic functions, Cauchy's integral formula and the residue theorem.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem-solving skills. Effectively communicate general	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study.	Know to define and give some of the important properties of complex analytic functions. Learn certain elementary functions with special reference to the correspondence between certain portions of the z-plane and w-plane as

				and discipline-specific information, ideas and opinions.	Communication skills Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various	determined by the relation between the function w and the independent variable. Become familiar with the integrals of analytic functions where many properties from calculus is carried over to complex case. Expand the concept of sequence and series which plays a major part of calculus to the complex domain. Learn to compute residues, which allow the determination of general contour integrals.

					problems appearing in different branches of mathematics.	
B.Sc. Mathematics	UEMAC20	Elective - I B: Number Theory	Course is designed to introduce students the concept of number theory, thereby enhancing the logical thinking of the students with regard to applications in security system and to construct the ability of students to work independently and do in-depth study of various notions of number theory.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions.	Disciplinary knowledgeCapability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skillsiii. Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization.iv. Ability to explain the development of mathematics in the civilizational context	Learn about some important results in the theory of numbers including the prime number theorem, Chinese remainder theorem, Wilson's theorem and their consequences. Learn about number theoretic functions, modular arithmetic and their applications. Familiarize with modular arithmetic and find primitive roots of prime and composite numbers. Know about open problems in number theory, namely, the Goldbach conjecture and twin-prime conjecture.

					and itsrole as queen of all sciences.: Critical thinkingAbility to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics.	Apply public crypto systems, in particular, RSA.
B.Sc. Mathematics	UCMAL20	Linear Algebra	To familiarize the concepts of linear transformation and their matrices.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills. Effectively	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate	The learners will be able to Understand the concepts of basis, linear dependence and independence. Analyze the concepts of dual spaces in vector space and inner product space. Understand the concepts of linear

				communicate general and discipline-specific information, ideas and opinions. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	programme of study. Communication skills Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations. Ability to use mathematics as a precise language of communication in other branches of human knowledge and communicate long standing unsolved problems in mathematics. : Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics.	transformation, characteristic roots and characteristic vectors. Obtain the matrix for linear transformations. Acquire knowledge about determinants, trace and transpose by linear transformations.

					Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics. Problem-solving Capability to solve problems in computer graphics using concepts of linear algebra. iv. Ability to provide new solutions using the domain knowledge of mathematics.	
B.Sc. Mathematics	UCMAM20	Real Analysis - II	Course is designed to create an interest and to deepen the knowledge of students in concepts of real analysis, to make the students think logically and objectively and to make the students understand the difference	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines	Understand some properties of metric spaces like openness, closedness, boundedness and totally boundedness. Know the fundamental concepts of complete and

			between the Riemann and Lebasque integrability.	skills Effectively communicate general and discipline-specific information, ideas and opinions.	which form a part of an undergraduate programme of study. Communication skills Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the	compact metric space. Apply the properties of Riemann integrable functions. Assimilate the concept of partition on an interval in R and understand about Lebesgue integrability. Acquire knowledge about measurable functions and their properties.

					results and apply them in various problems appearing in different branches of mathematics.	
B.Sc. Mathematics	UEMAC20	Elective - II A: Graph Theory	Course is designed to introduce the students to the beautiful and elegant theory of graphs and to study and develop the concepts of different graphs.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions. Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills iii. Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization.	Understand the basic graph theory concepts Analyse the connectedness in graphs using vertices and edges. Identify the uniqueness of paths using tree concepts. Acquire wide knowledge of mathematical principles of graphs Understand the emerging research topics based on graphs

				Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	iv. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics. Digital literacy Capability to understand and apply the programming concepts of C and C++ to mathematical investigations and problem solving.	

B.Sc. Mathematics	UEMAD20	Elective - II B : Discrete Mathematics	Course is designed to introduce students to the concept of basic discrete mathematics, thereby enhancing the logical thinking of the students with regard to discrete domain, to train the students in the applications of the discrete mathematical structures and to construct the ability of students to work independently and do in-depth study of various notions of discrete mathematics.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-specific information, ideas and opinions. Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society. Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication skills Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its role as queen	Learn about partially ordered sets. Understand lattices and their types. Understand Boolean algebra and Boolean functions, logic gates, switching circuits and their applications. Solve real-life problems using finite-state and Turing machines. Assimilate various graph theoretic concepts and familiarize with their applications.

				and contribute towards the needs of the society.	of all sciences. Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches of mathematics.	
B.Sc. Mathematics	USMAD20	SBE VI: Fuzzy Set Theory	Course is designed to explain the emergence of fuzzy set from an historical perspective and to introduce the basic concepts of the existing research topic fuzzy sets.	Attain knowledge and understand the principles and concepts in the respective discipline. Acquire and apply analytical, critical and creative thinking, and problem solving skills Effectively communicate general and discipline-	Disciplinary knowledge Capability to demonstrate comprehensive knowledge of Mathematics and understand one or more disciplines which form a part of an undergraduate programme of study. Communication	Distinguish between classical crisp set and fuzzy set using characteristic function and membership function respectively. Understand the operations on the fuzzy set which are generalization of crisp set operations. Represent the notion of fuzzy relational

				specific information, ideas and opinions.	skills iii. Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization. Ability to explain the development of mathematics in the civilizational context and its role as queen of all sciences. Critical thinking Ability to employ critical thinking in understanding the concepts in every area of Mathematics. Analytical thinking Ability to analyze the results and apply them in various problems appearing in different branches	equations based upon the max-min composition. Model fuzzy graphs which provide provision to represent different types of relationships Know about the fuzzy number which is a special form of a fuzzy set on the set of real numbers.

					of mathematics.	
B.Sc. Microbiology	UCMBD20	Basic Immunology and Microbial genetics- I	The syllabus is designed to provide knowledge on immunity and organs of immune system, types of antigens and antibody interactions and the role of DNA as a basic unit of gene expression.	Effectively communicate general and discipline-specific information, ideas and opinions.	Acquire an in-depth knowledge on the fundamental concepts and scope of Microbiology and its related fields.	Discuss the overall organization of the immune system and differentiate the humoral and cell mediated immune mechanisms. Explain about types of antigen, antibody and apply the principles and techniques involved in antibody production. Describe the structure of DNA & RNA with their physical & chemical properties. Familiarize with the process involved in the replication of DNA.
B.Sc. Microbiology	UCMBE20	Applied Immunology and Microbial genetics- II	The syllabus is designed to familiarize students on the antigen antibody reactions invivo and exvivo and an in depth	Attain knowledge and understand the principles and concepts in the respective discipline.	Develop and execute oral and writing skills necessary for effective communication of	Outline and apply the basic principle and mechanism of antigen and antibody reactions.

			understanding on the central dogma of molecular biology.		discipline specific information and experimental results.	Discuss on the significance of autoimmune diseases, hypersensitivity reactions and interpret on different types of vaccine and vaccination schedule. Explain the gene transfer mechanisms between the prokaryotes and eukaryotes. Identify mutations and DNA repair mechanisms. Comprehend the process of protein synthesis and the methods of gene expression.
B.Sc. Microbiology	UCMBF20	Basic and Applied Immunology	To course is framed to impart hands on training on various agglutination and precipitation reaction and to provide an insight in identifying the cells of	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Develop and execute oral and writing skills necessary for effective communication of discipline specific	Identify the ABO blood groups and its Rh types. Enumerate and observe various granulocytic and

			immune system.		information and experimental results.	agranulocytic cells of immune system. Perform serological diagnosis for the detection of typhoid, syphilis, rheumatoid factor and anti streptolysin 'o'. Demonstrate the direct and indirect pregnancy testing procedure. Quantitate the antigens and antibodies by performing immunodiffusion techniques.
B.Sc. Microbiology	UCMBH20	Food, Dairy and Industrial Microbiology	The course is designed for the learners to provide knowledge on food preservation, causes of spoilage, control and preventive measures from harmful microorganisms; acquire idea about fermentation technology	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Realize the application-oriented aspects of Microbiology and assimilate the technical skills in basic, medical and applied Microbiology.	Understand the role of microorganisms in food and the factors influencing their growth Apply the principles and procedures involved in preservation of food. Identifying the

			and commercially important microbial products.			spoilage causing microorganisms in various foods and analysing the significance of food borne and milk borne diseases in association with public health. Formulate knowledge on the fermentation process with adequate information on the fermenters and identifying industrially important microorganisms. Discuss on the industrial production and purification of sauerkraut, cheese, yoghurt, organic solvents, beverages, vitamins and growth factors

B.Sc. Microbiology	UCMBI20	Molecular Biology and rDNA Technology	The course is framed for the learners to understand the concepts of recombinant DNA technology and strategies involved in gene manipulations.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Attain higher knowledge by developing competency in the field of Microbiology assuring and enhancing entrepreneurial skills for the betterment of the society.	Compare the use of various cloning vectors in gene cloning techniques and the application of genetic engineering and strain improvement using mutational rDNA technology. Discuss on the methods involved in the Production, of pharmaceutical products and the importance of Gene therapy.
B.Sc. Microbiology	UEMBB20	Entrepreneurial Microbiology	The syllabus is framed to facilitate the students understanding on the concepts of entrepreneurship such as Planning, decision making, leadership, organizations and authority.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society	Attain higher knowledge by developing competency in the field of Microbiology assuring and enhancing entrepreneurial skills for the betterment of the society.	Explain the historical development of industrial Microbiology and outline on the importance of entrepreneur development and risk assessment. Analyze the microbial

						cells as fermented products. Demonstrate the procedures involved in mushroom cultivation and its storage method. Utilize various microorganisms as biofertilizers. Design and use patent in the development of entrepreneurship.
B.Sc. Microbiology	UCMBK20	Microbial Ecology and Soil Microbiology	The course is designed to make the learners understand on the microbial ecology, their interaction, biogeochemical cycling and waste management.	Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.	Understand and explain the diversity of microorganisms and its interaction with the environment for sustainable development.	Compare the role of microbial communities in the environment and discuss on the significance of Aero and Water Microbiology Assess on the microbiological aspects of management of sewage and design the treatment procedures.

						Outline on the importance of bioremediation and biodegradation of xenobiotic compounds. Familiarize with microorganisms of soil and their role in biogeochemical cycle. Comprehend the importance of plant-microbe interactions.
B.Sc. Microbiology	UEMBC20	Marine Microbiology	To course makes students understand on the ecological role of microorganisms in marine environment.	Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.	Understand and explain the diversity of microorganisms and its interaction with the environment for sustainable development.	Outline about the different marine environment and compare the microbial communities in the aquatic environment. Discuss adaptations strategies of various extremophilic microorganisms, extremozymes and their importance in biotechnology. Identify the kinetics

						of aquatic microbial population and microbial interactions – symbiosis and antagonism. Describe about the marine food borne and water borne pathogens. Explain the production and biotechnological applications of novel marine microbial products.
B.Sc. Microbiology	UEMBD20	Microbial Nanotechnology	The course syllabus facilitates students understanding on microbial nanotechnology and its applications.	Attain knowledge and understand the principles and concepts in the respective discipline.	Acquire an in-depth knowledge on the fundamental concepts and scope of Microbiology and its related fields.	Apply nanotechnology for air and water treatment and become familiar with nanoscience education in India and abroad.
B.Sc. Microbiology	UEMBF20	Advanced Microbiology	The course is designed to provide the learners an overview on the advanced aspects of Microbiology	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills	Attain higher knowledge by developing competency in the field of Microbiology	Utilize microorganisms in the preparation of cosmetics. Evaluate the

				and contribute towards the needs of the society.	assuring and enhancing entrepreneurial skills for the betterment of the society.	biological potential in samples return from satellites and solar system. Discuss the role of antimicrobial fabrics, carpets, tiles, colorants and produce bacteriostatic sanitary napkins and towels. Comprehend on paper, rubber and plastic Microbiology Analyze the methods for producing its antimicrobial products.
B.Sc. Microbiology	USMBD20	Diagnostic Microbiology	The course provides the learners an overview on clinical Microbiology, laboratory organization and various diagnostic approaches from traditional to molecular methods.	Effectively communicate general and discipline-specific information, ideas and opinions.	Realize the application-oriented aspects of Microbiology and assimilate the technical skills in basic, medical and applied Microbiology.	Explain general safety regulations and guidelines of Microbiology laboratory. Apply procedures in the collection and transport of clinical specimens. Examine and identify

						the pathogenic microorganisms from clinical specimens. Perform serological and molecular methods for the diagnosis of diseases. Determine the sensitivity and resistance pattern of bacterial pathogens to various antibiotics.
B.Sc. Physics	UCPHG20	Electricity and Magnetism	To make the students understand the principles and theory of electrostatics, current electricity, thermos electricity, electromagnetism and alternating current.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Analyze physical problems and develop correct solutions using natural laws.	Gain confidence in their ability to apply mathematical methods to understand electromagnetic problems to real-life situations
B.Sc. Physics	UCPHH20	Basic Electronics	To acquire the knowledge about the characteristics and working principles of semiconductor diodes, transistors, FET, UJT and SCR.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Students will develop the proficiency in the skill of data using a variety of laboratory instruments	Analysis the working of semiconductor circuits such as rectifiers, Amplifiers, oscillators, and multivibrators.

B.Sc. Physics	UEPHC20	Solid State Physics	To study electrons in solids and key features distinguishing metals, insulators and semiconductors and defects in crystals.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Students will realize and develop an understanding of the impact of physics and science on society	Understand about solid materials and crystal structure.
B.Sc. Physics	UCPHH20	Atomic Physics	To provide the students with basic ideas of properties of atoms and ions when subjected to Electric and magnetic fields.	Effectively communicate general and discipline-specific information, ideas and opinions	Analyze physical problems and develop correct solutions using natural laws.	Realize the theories explaining the structure of atoms and the origin of the observed spectra.
B.Sc. Physics	UCPHJ20	Nuclear Physics	Students learn about nuclear models, nuclear reactions, and radioactivity. Students might also examine nuclear imaging, dosimetry, and isotopic dating in a course focusing on nuclear science's applications.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Students are also expected to develop skills in Physics for competitive examinations	Demonstrate a knowledge of fundamental aspects of the structure of the nucleus, radioactive decay, nuclear reactions and the interaction of radiation and matter.

B.Sc. Visual Communication	UCVCA20	Introduction to Visual Communication	To give an overview about the field of Visual communication and Visual language and to enable them to understand the various fields of work in this area	Attain knowledge and understand the principles and concepts in the respective discipline.	To Acquire Fundamental knowledge of Visual communication and the related study area.	Identifying the Essential aspects of Visual Language.
B.Sc. Visual Communication	UCVCD20	Practical II – Professional Photography	To enable students to try first-hand, the basic techniques of photography and to develop the skills for a good photographer	Attain knowledge and understand the principles and concepts in the respective discipline.	To become competent enough to undertake the professional job as per the demands and requirements of the media and Entertainment Industry.	Acquiring knowledge in lighting and exposure techniques
B.Sc. Visual Communication	UABAA20	Allied– II: Basics in Advertising	To provide a basic understanding about the field of Advertising and to develop skills in creating media advertisement.	Effectively communicate general and discipline-specific information, ideas and opinions.	To become ethically committed media professionals and entrepreneur by adhering to human values, Indian, and the Global culture.	Acquiring basic knowledge about advertising media.

B.Sc. Visual Communication	UCVCH20	Practical IV-Post Production Editing	To teach students the art of editing videos through Adobe Premier CC software and to complete basic exercises in editing.	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	To make women professionals in media and attain professional portfolios to become entrepreneurs to increase employability.	Create a short film or documentary using editing techniques.
B.Sc. Visual Communication	UCVCI20	Media Research	To orient students on the need for media research and the techniques and process of research studies	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	To become ethically committed media professionals and entrepreneur by adhering to human values, Indian, and the Global culture.	Acquiring Knowledge in Data Analysis and Presentation.
B.Sc. Visual Communication	UCVCJ20	Film Appreciation	To introduce films as a form of visual communication and develop technical knowledge and critical outlook towards film making	Emulate positive social values and exercise leadership qualities and team work.	To become ethically committed media professionals and entrepreneur by adhering to human values, Indian, and the Global culture.	Identifying the concepts of Film as a Mass medium and its Production Stages.
B.Sc. Visual Communication	UCVCK20	Digital Public Relations	To initiate students to the field of Public Relations by giving them a background, trends and techniques in PR	Emulate positive social values and exercise leadership qualities and team work.	To become competent enough to undertake the professional job as per the demands and	Evaluating the Process of PR and acquiring the profound knowledge in Public relation

					requirements of the media and Entertainment Industry.	writing.
B.Sc. Visual Communication	UCVCN20	Project -1 Documentary Production	To train students in short-film making or documentary making by putting into practice the techniques learned in television production and script writing through team work.	Emulate positive social values and exercise leadership qualities and team work.	To make women professionals in media and attain professional portfolios to become entrepreneurs to increase employability.	Presenting the Documentation with Master Copy.
B.Sc. Visual Communication	USCMC520	Skill-Based Elective - E-Content - Production	To enable students know about the production process and techniques of e-content development, implementing effective e-content material for education field.	Effectively communicate general and discipline-specific information, ideas and opinions.	To get equipped with ICT competencies including Digital literacy.	Executing and publishing the E-contents for formal education.
B.Sc. Visual Communication	UGCMA52 0	Non-Major Elective – I Advertising	To equip students with tools for critical consumption of Media.	Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.	To become ethically committed media professionals and entrepreneur by adhering to human values, Indian, and the Global culture.	To find the relationship between the social media alternative media & democracy.

B.Sc. Visual Communication	UCVCP20	Introduction to ICT and New Media	• To give students a brief idea of the evolution of the Communication and Information Technology, its effects on Economics and working in the New Media	Effectively communicate general and discipline-specific information, ideas and opinions.	To get equipped with ICT competencies including Digital literacy.	Implementing the ICT tools and techniques in New Media.
B.Sc. Visual Communication	UEVCA20	Elective II A: E-Content Development	To enable students, know about the production process and techniques of e-content development, implementing effective e-content material for education field.	Effectively communicate general and discipline-specific information, ideas and opinions.	To get equipped with ICT competencies including Digital literacy.	Evaluating the E-learning platforms and technologies
B.Sc. Visual Communication	UCVCR20	Project – 2 - Short Film Production	To train students in short-film making or documentary making by putting into practice the techniques learned in television production and script writing	Emulate positive social values and exercise leadership qualities and team work.	To make women professionals in media and attain professional portfolios to become entrepreneurs to increase employability.	Presenting the Documentation with Master Copy.
B.Sc. Visual Communication	USCMD620	Skill-Based Elective Digital Publishing	To learn the basic principles of printing and methodologies used for printing and print finishing.	Attain knowledge and understand the principles and concepts in the respective discipline.	To get equipped with ICT competencies including Digital literacy.	Acquiring the Knowledge in final Printing Process.

B.Sc. Visual Communication	UGCMA620	Non-Major Elective - II- Advertising	To provide a basic understanding about the field of Advertising and to develop skills in creating media advertisement	Effectively communicate general and discipline-specific information, ideas and opinions.	To become ethically committed media professionals and entrepreneur by adhering to human values, Indian, and the Global culture.	Acquiring basic knowledge about advertising Concepts.
B.Sc. Zoology	UCZOJ20	Biotechnology	Enable students to venture into R&D.	Attain knowledge and understand the principles and concepts in the respective discipline.	Undertake further studies in Zoology or Multidisciplinary areas.	Explain the scope and branches of Biotechnology and summarize Genetic Engineering. Describe Cloning strategies. Explain Gene transfer mechanism and Blotting Techniques. Demonstrate Animal Cell Culture and explain the applications of cell culture. Discuss the applications of Genetic Engineering in various fields.

B.Sc. Zoology	UCZOK20	Environmental Biology	Create awareness on Environment issues and conservation.	Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.	Undertake further studies in Zoology or Multidisciplinary areas.	Explain ecology its branches and abiotic and biotic components of ecosystem. Discuss animal association, biogeochemical cycle and Ecosystem and its functions. Discuss the structure and functions of terrestrial and aquatic ecosystems. Describe the Characteristics of population, Community and Ecological Succession Discuss the causes of pollution their control measures and wildlife management.
B.Sc. Zoology	UEZOC20	Elective II A Microbiology	Students will gain knowledge about microbes, their application in industry and medical field.	Attain knowledge and understand the principles and concepts in the respective discipline.	Undertake further studies in Zoology or Multidisciplinary areas.	Describe the structure and function of bacteria and virus. Apply the process of media preparation and

						bacterial culture. Discuss the various sterilization techniques and chemotherapeutic agents. Discuss the role of microbes in food production and preservation. Discuss the disease causing microorganisms.
B.Sc. Zoology	UEZOD20	Elective II B Bioinstrumentation	Apply the principles and techniques in research.	Attain knowledge and understand the principles and concepts in the respective discipline.	Undertake further studies in Zoology or Multidisciplinary areas.	Apply the principle and construction of the instruments. Demonstrate the usage of the instruments. Illustrate the working method of various techniques. Discuss the application of the techniques. Apply the skill of instrumentation and

						micro techniques.
B.Sc. Zoology	UEZOE20	Elective III A Immunology	Enable to understand the functions of immune system and their application in medical field.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate comprehensive knowledge on the complexity of life process, their molecular, cellular and physiological process, their genetics, evolution, behaviour and their interrelationship with the environment.	Describe the primary and secondary lymphoid organs. Categorize types of immunity and the cells involved in immunity. Analyse the structure and function of antigens and antibodies. Examine the antigen antibody reaction and its role in transplantation, hypersensitivity, autoimmunity and AIDS. Analyse immunization and its importance in prevention of diseases.

B.Sc. Zoology	USZOF620	Animal Behaviour	Enable to understand the normal and abnormal behaviour and apply it in the field.	Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.	Demonstrate comprehensive knowledge on the complexity of life process, their molecular, cellular and physiological process, their genetics, evolution, behaviour and their interrelationship with the environment.	Familiarize with various techniques to study the animal behaviour in lab and in Wild. Analyze the various modes of communication, locomotion foraging and Caching. Comprehend the process of learning, memory, hormonal and neural systems. Compute the social organization and to differentiate behaviour. Study the adverse effects and cure for abnormal behaviour among the Wild domestic and pet animals.
B.Sc. Zoology	UGZOA20	NME- Maternal and Child Psychology	Help the student to understand the complexity of Mother and Child Psychology.	Emulate positive social values and exercise leadership qualities and team work.	Exercise leadership qualities and moral values through ethical ways with the concern for the	Comprehend the puberty, natal periods and maternal changes. Explain the growth, developmental stages

					society.	and motor skills Gains insights on the stages of cognitive development and personality. Familiarize different emotions, emotional development and moral development. Identify, classify and differentiate the gifted, mentally retarded and backward children.
B.Sc. Psychology	UASPA21	Statistics in psychology	To introduce the basic concepts of statistics and to apply statistical methods in psychological research.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Ability to handle various life situations confidently and competently, Capability for inquiring about appropriate questions relating to the concepts in various fields of Psychology.	Understand the concepts related to statistics

B.Sc. Psychology	UCPYJ22	Abnormal psychology-I	To introduce the fundamental knowledge in the field of clinical psychology with emphasis on critical understanding of diagnostic criteria and treatment	Attain knowledge and understand the principles and concepts in the respective discipline	Define major concepts in psychology and explain the theoretical perspectives of the fields in Psychology.	Explain the differences between and biological and psychosocial model of treatment for abnormal behaviour.
B.Sc. Psychology	UCPYK22	Introduction to Research Methodology	To equip students with the knowledge and ability to produce research papers.	Attain knowledge and understand the principles and concepts in the respective discipline	Ability to handle various life situations confidently and competently, Capability for inquiring about appropriate questions relating to the concepts in various fields of psychology.	Understand the meaning of research and the principles that govern it and acquire knowledge on research process to write the structured report.
B.Sc. Psychology	UCPYL22	Experimental psychology-I	To provide practical exposure to assess, analyse and interpret various psychological concepts.	Attain knowledge and understand the principles and concepts in the respective discipline	Capability of demonstrating comprehensive knowledge of Psychology and understanding of one or more disciplines which form a part of the undergraduate programme of study.	Explain the logic of the psychology experiment and describe the features of experimental methodology intended to satisfy that logic.

B.Sc. Psychology	UCPYN22	Abnormal psychology II	To introduce students to various disorders related to mood, psychotic, personality and substance use disorders	Attain knowledge and understand the principles and concepts in the respective discipline.	Define major concepts in psychology and explain the theoretical perspectives of the fields in Psychology.	Summaries the concepts ,symptoms and treatments of various disorders
B.Sc. Psychology	UCPYO22	Experimental psychology-II	To provide practical exposure to assess, analyse and interpret various psychological concepts and to understand the mental status examination.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Capability of demonstrating comprehensive knowledge of Psychology and understanding of one or more disciplines which form a part of the undergraduate programme of study.	Explain the logic of the psychology experiment and describe the features of experimental methodology intended to satisfy that logic.
B.Sc. Psychology	UCPYP22	Project	To equip students with professional competence based on their core subjects learnt.	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Use effective and fluent written, oral and visual communication to convey ideas and concept	To understand and apply the learnt knowledge through practically derived studies,

B.Com (B&I)	UAMEA20	Allied III: Managerial Economics	Stream based on pricing, demand and supply pattern analysis to develop the decision making skills	Attain knowledge and understand the principles and concepts in the respective discipline.	Engaging in Lifelong Learning, apply ethical principles and excel as a socially committed individual having empathy for the needs of the society.	Understands the concepts of managerial economics
B.Com (B&I)	UAIBA20	Allied IV: International Business	Understanding the country level relationship and its trade practices in worldwide	Effectively communicate general and discipline-specific information, ideas and opinions.	Engaging in Lifelong Learning, apply ethical principles and excel as a socially committed individual having empathy for the needs of the society.	Understands various operations involved in International business
B.Com (B&I)	UEBIF20	Elective-II B: Marketing	Analysis of Marketing mix elements: Price, product, promotion and place	Pursue higher knowledge, qualify professionally, enhance entrepreneurial skills and contribute towards the needs of the society.	Engaging in Lifelong Learning, apply ethical principles and excel as a socially committed individual having empathy for the needs of the society.	Understands the concept of marketing and consumer behavior

B.Com (B&I)	UCBIJ20	Research Methodology	Preparing dissertation out of research carried out in local place focusing on specific research problem	Acquire and apply analytical, critical and creative thinking, and problem-solving skills	Engaging in Lifelong Learning, apply ethical principles and excel as a socially committed individual having empathy for the needs of the society	Understands research and its procedures
B.Com (B&I)	UCBIQ20	Financial Management	Financial management strategies is about creating profit for the business and ensuring acceptable return on investment in global level	Attain knowledge and understand the principles and concepts in the respective discipline	To understand and apply the knowledge of Accounting & finance in the domain of Commerce, Banking and Insurance.	To make the students conversant with the aspects and importance of Finance and its management
B.Com (B&I)	UEBIA20	Elective I A: Marketing in Banking and Insurance	Identifying various marketing strategies towards banking& insurance sector	Emulate positive social values and exercise leadership qualities and team work.	Engaging in Lifelong Learning, apply ethical principles and excel as a socially committed individual having empathy for the needs of the society.	understands the Concepts of service marketing.

B.B.A (Hospital Administration)	UCHAA20	Fundamentals of Management	To understand the evolution and fundamental concepts related to business.	Attain knowledge and understand the principles and concepts in the respective discipline.	Possess the basic knowledge and skills in managerial domain and healthcare domain.	Understand the management theories, functions and responsibilities of managers.
B.B.A (Hospital Administration)	UCHAB20	Foundation in Hospital Administration	To understand the overall healthcare systems.	Attain knowledge and understand the principles and concepts in the respective discipline.	Possess the basic knowledge and skills in managerial domain and healthcare domain.	Understand the functions of various healthcare systems and learn relevant medical terminology.
B.B.A (Hospital Administration)	UCHAD20	Medical Terminology for Administration	To understand and implement right usage of medical terms.	Attain knowledge and understand the principles and concepts in the respective discipline.	Possess the basic knowledge and skills in managerial domain and healthcare domain.	Recognize and learn the meanings of Standard Medical Abbreviations.
B.B.A (Hospital Administration)	UEHAB20	Elective I B: Logistics and Supply Chain Management	To acquire insight in the fundamentals of supply chain management.	Attain knowledge and understand the principles and concepts in the respective discipline.	Possess the basic knowledge and skills in managerial domain and healthcare domain.	Develop the conceptual knowledge about the process of supply chain and its drivers.
B.B.A (Hospital Administration)	UAHSM20	Allied IV: Health services Marketing	To identify critical issues in service design including the nature of service products & markets, building the service model and creating customer value.	Effectively communicate general and discipline-specific information, ideas and opinions.	Demonstrate managerial knowledge and analytical skills in healthcare sector through reflective learning.	Understand the similarities and differences in service based and physical product based marketing activities.

B.B.A (Hospital Administration)	UCHAM20	Organizational Behavior	To analyze individual and group behavior, and understand the implications of organizational behavior on the process of management.	Emulate positive social values and exercise leadership qualities and team work.	Possess the basic knowledge and skills in managerial domain and healthcare domain.	Analyze and compare different theories used to explain individual behavior.
B.B.A (Hospital Administration)	UCHAN20	Global Healthcare System	To understand, recognize and compare the governance, finance and technology aspects of healthcare systems of various countries.	Attain knowledge and understand the principles and concepts in the respective discipline.	Possess the basic knowledge and skills in managerial domain and healthcare domain.	Realize the challenges faced by hospitals which have implemented medical tourism in their system.
B.B.A (Hospital Administration)	UGHAA521	Non Major Elective I: Management Information System	To analyze operational and tactical information systems in functional areas of business.	Attain knowledge and understand the principles and concepts in the respective discipline.	Demonstrate managerial knowledge and analytical skills in healthcare sector through reflective learning.	Evaluate operational and tactical information systems in functional areas of business including marketing, finance and human resource.
B.B.A (Hospital Administration)	UCHAQ20	Materials and Equipment Management	To develop, organize and implement the materials management system in the hospital.	Attain knowledge and understand the principles and concepts in the respective discipline.	Possess the basic knowledge and skills in managerial domain and healthcare domain.	Recognize the importance of value and inventory management in materials management and select the appropriate methods

						for sustainable economic functioning.
Allied Botany	UBBTA20/ UABTA20	Optional Allied Botany-I/ Allied Botany -I	It's a supportive course for the students to excel in life sciences and an allied course for other major students. They are also given the knowledge to become agripreneurs. Students are enabled to apply for applied sciences.	Attain knowledge and understand the principles and concepts in the respective discipline. Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.		Outline the general characters, life cycle and economic importance of Algae and Fungi. Distinguish the general characters of Bacteria and Virus Understand the general characters and life cycle of Bryophyta, Pteridophyta and Gymnosperms. Upgrade the knowledge in Cell biology and Genetics Identify the pathogens and the applications of Plants in agriculture.

Allied Botany	UBBTB20 /UABTB20	Optional Allied Botany-II/ Allied Botany - II	It’s a supportive course for the students to excel in life sciences and an allied course for other major students. They are also given the knowledge to become agripreneurs. Students are enabled to apply for applied sciences.	Attain knowledge and understand the principles and concepts in the respective discipline. Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.		Classify Angiosperms and identify the family with the characters. Identify and analyse the histology of Plants. Gain knowledge on Embryology of Plants. Understand the key process of Plant Physiology. Integrate the knowledge of Horticulture in growing Plants.
Allied Botany	UNEVS20	Environmental Studies	Course is designed for students to learn biodiversity and to conserve the environment and for their future. They are also exposed to projects on environmental issues.	Appreciate biodiversity and enhance eco-consciousness for sustainable development of the society.		Gain knowledge on multidisciplinary nature of environmental studies Understand the Ecosystem, its structure and function Understand the conservation of biodiversity Gain knowledge on Environmental pollution, causes and

						its effects Apply the laws in prevention of environment.
Foundation Course Tamil	ULTAA20	Tamil Paper I	To improve Students Human Rights values and awareness to Humanity	To develop students as human rights thinkers and humanitarians	Learning to read, Compassionate and observe beyond the classroom	Creating social awareness through literature Inculcation of life values of witnesses through biography
Foundation Course Tamil	ULTAB20	Tamil Paper II	To Aware to the students religious Harmony	The way of literature is to develop a sense of religious harmony among the students	Cultivating the mind of students with religious ethics to love all living beings, do no harm	The way of devotional literature is to promote the spirit of equality and brotherhood
Foundation Course Tamil	ULTAC20	Tamil Paper III	Individual behavior to cultivate via of Sangam literature to the students	Nurturing students through education to overcome the evils found in the society	To develop students as moralists to develop a good society	To lead a moral life through moral literature
Tamil Paper IV	Foundation Course Tamil	ULTAD20	Tamil Paper IV	To develop students creative thinking and Job Oriented skills (LSRW)	Creating basic skills among students and creating employment	Facilitate self-sufficiency in life and lead a self-reliant life

Foundation Course Hindi	ULHNA20	Hindi Paper 1	Hindi as an National language to know the origin and development of different literary forms	Attain knowledge and understand the principles and concepts in the respective discipline.		To appreciate Modern Hindi Poetry
Foundation Course Hindi	ULHNB20	Hindi Paper 2	Hindi as an National language to know the origin and development of different literary forms	Attain knowledge and understand the principles and concepts in the respective discipline.		To enhance critical thinking, imagination, self and social awareness through the study of novels and poetry
Foundation Course Hindi	ULHNC20	Hindi Paper 3	Hindi as an National language to know the origin and development of different literary forms	Attain knowledge and understand the principles and concepts in the respective discipline.		Enhance the creative writing skills
Foundation Course Hindi	ULHND20	Hindi Paper 4	Hindi as an National language to know the origin and development of different literary forms	Attain knowledge and understand the principles and concepts in the respective discipline.		To enhance critical thinking, imagination, self and social awareness through the study of novels and poetry
M.A. English	PCENA20	Chaucer and Elizabethan Age	The students are introduced to classic texts of contemporary significance and are also encouraged to publish	Persist in life-long learning for personal and societal progress.	Demonstrate wide knowledge of literary periods and movements, intellectual,	CO1 Recall the historical, social and biographical Influence

			research papers		linguistic, religious, and artistic influences Appreciate and discuss varying opinion of literary works	
M.A. English	PCENB20	Restoration literature and Eighteenth century	The students are introduced to classic texts of contemporary significance and are also encouraged to publish research papers	Persist in life-long learning for personal and societal progress.	Demonstrate wide knowledge of literary periods and movements, intellectual, linguistic, religious, and artistic influences Appreciate and discuss varying opinion of literary works	Identify and analyze the writer's perspective, expression and their reflection of life representing the Restoration age
M.A. English	PCENC20	Classical Literature of the World	The students are introduced to classic texts of contemporary significance and are also encouraged to publish research papers	Persist in life-long learning for personal and societal progress.	Demonstrate wide knowledge of literary periods and movements, intellectual, linguistic, religious, and artistic influences	Interpret the best that was known and thought in the world

					Appreciate and discuss varying opinion of literary works	
M.A. English	PCENE20	American Literature	The students are introduced to classic texts of contemporary significance and are also encouraged to publish research papers	Persist in life-long learning for personal and societal progress.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and discuss varying opinion of literary works Critically interpret emerging traditions of literature, culture and thought in the canon of new literatures	Interpret American life and Culture against the background of History and Literary development Discuss American Literary artists, who were innovative in their outlook and literary temper.

M.A. English	PCENH20	Women's Writing	The students are introduced to works from women writers and are also encouraged to publish research papers	Integrate issues of social relevance in the field of study.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and discuss varying opinion of literary works Critically interpret emerging traditions of literature, culture and thought in the canon of new literatures	Explain diversity of women's experiences and their varied cultural moorings
M.A. English	PEENC20	Elective- IIA: Postcolonial Literature	The course includes works of writers from different countries to sensitize students on the impact of colonization and the response to it	Integrate issues of social relevance in the field of study.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and discuss varying opinion of literary works Critically interpret	Trace the aspects of subjectivity, race, class and feminism in the Postcolonial space Understand how literature shapes ideas about society and social identities in interaction with other discourses such as history and politics

					emerging traditions of literature, culture and thought in the canon of new literatures	Analyse the history of Colonial rule, liberation movements in various nations and develop a critical thinking on the movement of Postcolonialism
M.A. English	PEEND20	Elective- II B: Literature of the Marginalized	The course enables learners to recognize and appreciate socially active writers focusing on the problems of the marginalized from various countries	Integrate issues of social relevance in the field of study.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and discuss varying opinion of literary works Critically interpret emerging traditions of literature, culture and thought in the canon of new literatures	Analyze the voice of marginalized recorded in literature from the global and local context with comparative and analytical methodology

M.A. English	PCENI20	Romantic and Victorian literature	The course will enable learners to appreciate a movement and its ideology that has been influential from its advent and is in many ways relevant to the contemporary times	Integrate issues of social relevance in the field of study.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and discuss varying opinion of literary works Critically interpret emerging traditions of literature, culture and thought in the canon of new literatures	Explain the nature of Industrial Revolution, the subsequent scientific and material progress and to explore a society that was being re-organized around Science, Factories and Business. Connect the works of the Romantics and Victorians to their social and historical backgrounds and evaluate it
M.A. English	PCENJ20	Shakespeare Studies	The course aims at inculcating in learners' interest in contemporary approaches to Shakespeare so as to contribute to research on Shakespeare	Integrate issues of social relevance in the field of study.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and discuss varying opinion of literary works Critically interpret emerging	Evaluate Shakespeare's contribution to the English language and to the development of the modern drama and recognize various theories of literary criticism applied to Shakespeare's plays

					traditions of literature, culture and thought in the canon of new literatures	
M.A. English	PCENK20	Contemporary critical theory	The course focuses on transforming the learners into researchers familiar with contemporary literary and critical theories facilitating quality research	Develop research skills through multi/inter/trans-disciplinary perspectives.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and discuss varying opinion of literary works Critically interpret emerging traditions of literature, culture and thought in the canon of new literatures	Examine various critical theories for their success, drawbacks and influence Analyse critical ideas for an accurate understanding of literary works
M.A. English	PCENL20	Research Methodology	Recent trends in research and relevant methodology is introduced to students through the course	Develop research skills through multi/inter/trans-disciplinary perspectives.	Analyse and interpret Literature using traditional, modern, and contemporary theories and approaches Appreciate and	Identify and contextualize research problems

					discuss varying opinion of literary works Critically interpret emerging traditions of literature, culture and thought in the canon of new literatures	
M.A. English	PEENF20	Elective III A: Translation studies	The course aims at helping students become translators focusing on translating works in English to regional languages	Develop research skills through multi/inter/trans-disciplinary perspectives.	Critically interpret emerging traditions of literature, culture and thought in the canon of new literatures	Appraise the problems of equivalence and loss and gain between the SL and TL texts, leading to comparative evaluation of available versions of translations of a text
MSW	PCSWA20	Introduction to Social Work and Sociology	To gain an understanding of the concepts and the different processes of Social Work with special reference to Indian Society.	Integrate issues of social relevance in the field of study	To utilize the available resources for the empowerment of vulnerable groups and critically analyze the problems, needs to create impact in society	Able to understand Social Work as a Profession.

MSW	PCSWB20	Social Case Work	Dealing with individuals in solving problem using skills and techniques	Assimilate and apply principles and concept towards skill development and Employability	To enhance the individuals to help themselves with the scientific knowledge about the dynamics of problem and social issues.	Effectively understand the scope of Social Work
MSW	PCSWC20	Social Group Work	To acquire knowledge on Group Dynamics	Apply critical and scientific approaches to address problems and find solutions	To utilize the available resources for the empowerment of vulnerable groups and critically analyze the problems, needs to create impact in society	Acquire knowledge, skills and values in practicing social work with groups through programme planning.
MSW	PESWA20	Social Problems	Develops an understanding about various social problems, helps to find out the problems of weaker sections and educate the students about various social problems from various cultural backgrounds	Apply critical and scientific approaches to address problems and find solutions.	It brings a change in attitudes and values of individual irrespective of their class, caste or gender.	Analyze social problems and highlight the significance of social work intervention in the Indian context.

MSW	PISWA20 - IEC	Disaster Management	To enhance the awareness of institutional process in disasters.	Integrate issues of social relevance in the field of study.	Apply the knowledge of social work in the domain of community development, human resource management, medical and psychiatric rehabilitation.	Develop skills to analyze the factors leading to disaster
MSW	PCSWD20	Concurrent Field Work-I	To analyse the social system and its impact on individuals, groups, family, community and understand the role and functioning of organisation. Government and Non-Governmental.	Apply critical and scientific approaches to address problems and find solutions	To prepare the individual in understanding the human behaviour with the relation to society	Understand the role of a Social Worker in an agency and in the community.
MSW	PCSWE20	Human Growth and Personality Development	Helps to equip the students of social work with understanding of human behaviour and personality development models, and to introduce the students to various field of psychology.	Assimilate and apply principles and concept towards skill development and Employability	To prepare the individual in understanding the human behaviour with the relation to society	Explore the concept of social psychology and application of psychological tests.

MSW	PCSWF20	Social Work Research	To develop the capacity to independently conceptualize a problem and execute research.	Apply critical and scientific approaches to address problems and find solutions.	Apply the knowledge of social work in the domain of community development, human resource management, medical and psychiatric rehabilitation.	Provide clear plan of the research and understand framework of research methods and techniques through research design.
MSW	PCSWG20	Community Organisation and Social Action	To develop an understanding of the concepts related to working with communities.	Integrate issues of social relevance in the field of study.	To utilize the opportunity and of professionalism in the development process	Able to demonstrate familiarity with Community Organisation and Social Action as method of Social Work Profession.
MSW	PNHRA22	Human Rights	To sensitize students for the application of Human Rights to the various practice domains of the different profession	Persist in life-long learning for personal and societal progress	It brings a change in attitudes and values of individual irrespective of their class, caste or gender.	To strengthen the promotion and protection of human rights around the globe

MSW	PSHRB20	Human Resource Management	Acquire knowledge on various functions of Human Resource Management	Persist in life-long learning for personal and societal progress	It brings a change in attitudes and values of individual respective of their class, caste or gender	Acquire and build appropriate knowledge based on Human Resource Management
MSW	PESWE20	Project Formulation	To understand the strategies and techniques involved in project formulation.	Develop research skills through multi/inter/trans-disciplinary perspectives.	To enhance the individuals to help themselves with the scientific knowledge about the dynamics of problem and social issues.	Develop and support the basic concepts and nature of the project proposal support to strengthen the individual support to work with research.
MSW	PISWC20	Counselling	To develop a basic understanding of theories and skills in counselling.	Persist in life-long learning for personal and societal progress	To utilize the opportunity and of professionalism in the development process	Understand linkages of counselling and guidance in social work.
MSW	PSCDD20	Entrepreneurship Development	Course designed to develop entrepreneurial skills to craft innovative responses to social problems	Persist in life-long learning for personal and societal progress	To prepare the individual in understanding the human behaviour with the relation to society	Apply social entrepreneurship to both profit and non profit firms to create social value

MSW	PSHRD20	Organizational Behaviour	To present a new perspective for management	Develop research skills through multi/inter/trans-disciplinary perspectives.	To utilize the opportunity and of professionalism in the development process	Analyze individual and group behaviour and understand the implication of organizational behaviour on the process of management
MSW	PESWG20	Administration of Service Organization	To encourage students to apply administration process into practice.	Apply critical and scientific approaches to address problems and find solutions.	To utilize the opportunity and of professionalism in the development process	Application of administration process in service organization.
MSW	PISWD20	Social work profession in different settings	To develop an understanding of social work practice in various settings	Develop research skills through multi/inter/trans-disciplinary perspectives.	To utilize the opportunity and of professionalism in the development process	Able to understand the problem faced by professional social worker
MBA	PCBAC20	Economics For Management	To acquire the familiarity with the elements of production required in the current corporate scenario	Develop research skills through multi/inter/trans-disciplinary perspectives.	Students develop self-learning skills, and remain updated on contemporary management practices and can leverage their learning to provide solutions to business	Understand the assumption of pricing and Market competition

					problems.	
MBA	PCBAF20	Management Information System And Technology	To implement the conceptual and practical management concepts using information system and technology in the workplace.	Integrate issues of social relevance in the field of study.	Students develop self-learning skills, and remain updated on contemporary management practices and can leverage their learning to provide solutions to business problems.	Be able to classify the different functional business systems using information system and technology and can implement in their organization.
MBA	PCBAG20	Supply Chain Management	To learn about the latest trends in technology.	Integrate issues of social relevance in the field of study.	Students can objectively research on business and management problems by collecting, analysing, and interpreting the data and professionally recommend feasible solution/s.	Elaborate the current trends and technological implementation in the supply chain environment.
MBA	PCBAO20	Production And Operations Management	To understand the concept and techniques of production and operations management	Integrate issues of social relevance in the field of study.	Students can objectively research on business and management problems by	Appreciate the principles and applications relevant to the production and operation systems of

					collecting, analysing, and interpreting the data and professionally recommend feasible solution/s.	manufacturing/service firms.
MBA	PCBAP20	International Business And Ethics	To Develop Knowledge on Business Strategies and Culture in International Aspect and Familiarize the Learners with the International Trade and Business.	Develop research skills through multi/inter/trans-disciplinary perspectives.	Students can objectively research on business and management problems by collecting, analysing, and interpreting the data and professionally recommend feasible solution/s.	Understand the emergence and needs of Globalization in Business and acquire the concepts of International Business theories and Strategies.
MBA	PIBAB20	Disaster Management	To gain knowledge about the concept of disaster	Develop research skills through multi/inter/trans-disciplinary perspectives.	Students can objectively research on business and management problems by collecting, analysing, and interpreting the data and professionally recommend feasible	Understand the knowledge about the concept of Disaster

					solution/s.	
MBA	PIBAI20	Travel And Tourism Management	To educate the learners on Tourists Conduct and Motives	Develop research skills through multi/inter/trans-disciplinary perspectives.	Students can objectively research on business and management problems by collecting, analysing, and interpreting the data and professionally recommend feasible solution/s.	Be educated the on Tourists Conduct Motives and behavior
MBA	PIBAJ20	Cyber Security And Laws	To implement the conceptual and practical cyber security knowledge in the workplace	Develop research skills through multi/inter/trans-disciplinary perspectives.	Students can objectively research on business and management problems by collecting, analysing, and interpreting the data and professionally recommend feasible solution/s.	Analyze application securities enable students to understand the type of hackers and the techniques

MBA	PIBAK20	Management Of Multi National Corporation	To comprehend the origin and development of MNC's.	Develop research skills through multi/inter/trans-disciplinary perspectives.	Students can objectively research on business and management problems by collecting, analysing, and interpreting the data and professionally recommend feasible solution/s.	Understand international management with various schools of thoughts along with the problems faced by host countries.
MBA	PEMKA20	Retail Marketing	To introduce the student to the role of retailing and rural retailing in the distribution component	Assimilate and apply principles and concepts towards skill development and employability.	At the end of the course the students shall be able to conceptualize, critically analyse, provide solutions to problems challenging real-life situations, gain practical exposure in Business and Management.	Be provided with a comprehensive view of retailing and rural marketing in the distribution component.
MBA	PELMA20	Logistics Management	Enhance and develop the skills on international logistics functions.	Integrate issues of social relevance in the field of study.	Students develop self-learning skills, and remain updated on contemporary management	Analyze the strengths and weaknesses of packing and the emerging trends in the same.

					practices and can leverage their learning to provide solutions to business problems.	
MBA	PELMB20	Export and Import Management	To know all the in depth functionalities of Air Carriers.	Integrate issues of social relevance in the field of study.	Students develop self-learning skills, and remain updated on contemporary management practices and can leverage their learning to provide solutions to business problems.	Elaborate the procedures of Air Carriers.
MBA	PESSA20	Cloud Computing	To enable the evolution and role of Cloud Computing in business integration.	Develop research skills through multi/inter/trans-disciplinary perspectives.	Students gain the ability to synthesize knowledge with skills in the areas of Business and Management and can provide innovative and entrepreneurial solutions to job-related problems.	Understand how Cloud is evolved and will come out with good conceptual knowledge in Cloud Computing

MBA	PESSB20	Digital Business And E Commerce	To gain domain knowledge in all aspects of Digital and E-Commerce environment.	Assimilate and apply principles and concepts towards skill development and employability.	At the end of the course the students shall be able to conceptualize, critically analyse, provide solutions to problems challenging real-life situations, gain practical exposure in Business and Management.	Understand the concepts of E-marketing and Digital payment
MBA	PESSC20	Decision Support And Business Intelligence	To gain domain knowledge in all aspects of Decision Support system and Business Intelligence	Integrate issues of social relevance in the field of study.	Students develop self-learning skills, and remain updated on contemporary management practices and can leverage their learning to provide solutions to business problems.	Enable the student to understand about decision support systems
MBA	PEFNC20	Risk Management And Derivatives	The students will learn the fundamental concepts of derivative pricing and hedging and apply them to a variety of financial instruments.	Integrate issues of social relevance in the field of study.	The students can function effectively as an individual and in a group with the capacity to be a team leader, as an	Acquire knowledge and skills in the advanced financial derivatives

					entrepreneur, and administrator.	
MBA	PELMC20	Green Supply Chain and Logistics Management	To provide foundational knowledge associated with the green supply chain.	Integrate issues of social relevance in the field of study.	Students gain the ability to synthesize knowledge with skills in the areas of Business and Management and can provide innovative and entrepreneurial solutions to job-related problems.	Understand the concepts in green manufacturing and its challenges.
M.Com	PCCOC20	Organizational Behaviour	To provide the students a basic knowledge on the dynamics of individual and group behaviour for efficient and effective utilization of human resources in organisations	Persist in life-long learning for personal and societal progress.	Integrate cognitive and analytical skills to manage financial aspects of Business and Banks.	Understand the concepts of organizational behavior.
M.Com	PECOB20	Customer Relationship Management	The objective of the course is to enable the students to get familiarized with the existing Company Law and Secretarial Procedure	Persist in life-long learning for personal and societal progress.	Possess professional skills for employment and lifelong learning in Commerce and become successful entrepreneurs and professionals	Gain knowledge of customer relationship and its management

M.Com	PCCOH20	Bank Financial Management	To impart knowledge to the students on the Financial Management techniques applied by banks	Assimilate and apply principles and concepts towards skill development and employability.	Integrate cognitive and analytical skills to manage financial aspects of Business and Banks.	To demonstrate on correspondent banking system and its functions
M.Com	PECOC20	International Marketing Management	To enable the students to learn the procedures and strategies in International Marketing, Foreign Exchange regulations and Documentation for exporting	Assimilate and apply principles and concepts towards skill development and employability.	Possess professional skills for employment and lifelong learning in Commerce and become successful entrepreneurs and professionals	To understand the concepts and approaches of international marketing
M.Com	PECOD20	Management of Financial Derivatives	To provide adequate knowledge about wide range of financial derivatives having pivotal role in enhancing shareholders' value by ensuring access to the cheapest source of funds.	Assimilate and apply principles and concepts towards skill development and employability.	Integrate cognitive and analytical skills to manage financial aspects of Business and Banks.	Gain knowledge of the basics of derivatives and instruments involved in the same
M.Com	PCCOJ20	Services Marketing	To make the students aware of the basic concepts of various Services and their Marketing aspects	Persist in life-long learning for personal and societal progress.	Possess professional skills for employment and lifelong learning in Commerce and Become successful	To understand the concept of services marketing and services sectors in India

					entrepreneurs and professionals in the field of Banking, Auditing and Accounting, Insurance, Manufacturing industries and finance.	
M.Com	PICOC20	Total Quality Management	To introduce to the students the concept of Quality and Total Quality Management in Organisations and teach about the various quality standards to be adopted in various businesses	Integrate issues of social relevance in the field of study.	To inculcate the practical knowledge in the field of auditing, tax filing, share market and other finance related services.	Understand the concept of Quality Control and the procedures for implementing quality
M.Sc. Biochemistry	PCBCA20	Biomolecules	To understand the salient features of biomolecules in the organization of life.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Gain knowledge on the structure, different forms and significance of lipids in the system

M.Sc. Biochemistry	PCBCB20	Human Physiology and Nutrition	To study about the Physiological system of human body and Nutrients with their deficiencies.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Explain the physiology of muscle and neurotransmitters
M.Sc. Biochemistry	PCBCC20	Cell Biology	To understand the Cell, Cell organelles structure, function and metabolism	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Discuss about the various sub-cellular components of cells and its functions in the biological system
M.Sc. Biochemistry	PCBCG20	Practical I: Main Practical-I	To help students to expertise in the Biomolecules, Cell Dynamics and biochemical techniques.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Discuss qualitative and quantitative analysis of various biomolecules
M.Sc. Biochemistry	PCBCH20	Practical II: Main Practical-II	To learn about the analytical techniques and enzymology experiments.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	.Identify and purify biomolecules in a mixture by chromatographic technique

M.Sc. Biochemistry	PEBCA20	Elective IA: Biophysical Chemistry	To make the students to understand the concepts of bioenergetics and techniques.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Classify organic molecules by their functional groups
M.Sc. Biochemistry	PEBCB20	Elective IB: Pharmaceutical Biochemistry	To make the students aware of uses and abuse of drugs.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Explain the use of genetically engineered methods on novel drug delivery systems
M.Sc. Biochemistry	PCBCD20	Analytical Biochemistry	To understand the principles and applications of analytical techniques.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Pursue knowledge about centrifugation and radioactivity and critically assess advances with in the field
M.Sc. Biochemistry	PCBCE20	Enzymology	To learn the methodology involved in assessing the enzyme activity and mechanism of enzyme action.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	List the enzyme properties, nomenclature and purification of enzymes

M.Sc. Biochemistry	PCBCF20	Intermediary Metabolism	To make the students to understand the reactions catalyzed by different enzymes and their metabolic pathways.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Analyze complex chemical reactions and draw logical conclusion by interrelating metabolism
M.Sc. Biochemistry	PEBCC20	Elective IIA: Ecology, Evolution and Developmental Biology	The course enables the students to understand and analyze the role of ecological and evolutionary modifications in the development of organisms and their survival.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Apply the concept of evolution in population genetics
M.Sc. Biochemistry	PEBCD20	Elective II B: Toxicology	The course gives a detailed understanding and identification of toxic substances, dose-response, tests conducted and its impact on cellular activities.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Discuss the effects of toxic substances on molecular and cellular levels
M.Sc. Biochemistry	PCBCI20	Advanced Endocrinology	The course describes in detail about the role of endocrine glands, their secretion, its metabolic effect on target cells involving various	Integrate issues of social relevance in the field of study.	: Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Identify the structure and functions of endocrine glands and hormones

			signaling pathways and signal chain proteins.			
M.Sc. Biochemistry	PCBCJ20	Advanced Immunology	To help the students to understand the components of immune system and it's functioning.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Discuss the reason for different vaccination
M.Sc. Biochemistry	PCBCK20	Advanced Biotechnology	To learn how to apply the knowledge of genetic engineering in problem solving and in practice.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Apply the knowledge of genetic engineering in problem solving and in practice
M.Sc. Biochemistry	PCBCN20	Practical II: Main Practical III	The course is aimed to enable the student interpret hormonal imbalance and clinical conditions and also to provide in-depth practical knowledge and skill in performing immune-techniques and cell culture techniques.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Analyse the prevalence and impact of endocrine hormone in regulating health

M.Sc. Biochemistry	PCBCO20	Practical II: Main Practical - IV	To help students to expertise in the molecular biology and clinical biochemistry techniques.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Utilize practical knowledge and skill for diagnosing various diseases using biochemical analysis in blood specimen
M.Sc. Biochemistry	PEBCE20	Elective III A: Microbiology	To understand the importance of applications of microorganisms.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Identify the various infectious diseases, its causative agents and antimicrobial drugs
M.Sc. Biochemistry	PEBCF20	Elective III B: Research Methodology	To addresses the issues inherent in selecting a research problem and discuss the techniques and tools to be employed in completing a research project	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Understand the significance of internet in research
M.Sc. Biochemistry	PCBCL20	Molecular Biology	The course will enable the student to learn the molecular events occurring in gene and its application in field of biomedical and genetic research.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Describe the blueprint of life and its functions

M.Sc. Biochemistry	PCBCM20	Advanced Clinical Biochemistry	To gain concepts of assessing the human physiology using biological fluid.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Compare the liver and renal disorders
M.Sc. Biochemistry	PEBCG20	Elective IVA: Plant Biochemistry	To help the students to understand the plant metabolites and their application in the field of medicine.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Discuss the function and composition of different plant structures
M.Sc. Biochemistry	PEBCH20	Elective IV B: Herbal Therapy	To help students to understand the concepts in pharmacognosy and the role of medicinal plants.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Describe the concepts of Pharmacognosy
M.Sc. Biochemistry	PIBCA20	IEC: Organic Farming	To help students to understand the concepts and importance of organic farming and use it as a source of income generation	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Apply the concept of organic farming

M.Sc. Biochemistry	PIBCB20	IEC: Food Preservation	To enable students to understand the concepts of food preservation and methods involved	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Find the methods of food preservation
M.Sc. Biochemistry	PIBCC20	IEC: Horticulture	To emphasis on the significance and concepts of horticulture and the techniques involved.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Gain knowledge on cropping techniques and harvesting methods
M.Sc. Biochemistry	PIBCD20	IEC: Cancer Biology	To help students to understand the biology, diagnosis and treatment involved in cancer.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Examine the basic concepts of clinical research in oncology
M.Sc. Biochemistry	PIBCE20	IEC: Nanobiotechnology	The course aims to provide an interdisciplinary knowledge on Nano materials and their applications in biosciences.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Outline the prospective of Nano biology and Nano sensors

M.Sc. Biochemistry	PIBCF20	IEC: Stem cell Technology	The course gives in depth knowledge on stem cell biology, regulation of stem cell differentiation, tools to study and its utilization in treating various disorders	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Use hematopoietic stem cells in treating blood related disorders and diseases
M.Sc. Biochemistry	PIBCG20	IEC: Psychology	The course is aimed to enhance the psychological skills for the students to acquire factual knowledge and ability to conceptualize and apply in their life.	Integrate issues of social relevance in the field of study.	: Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Critically evaluate the fundamental processes underlying human behavior.
M.Sc. Biochemistry	PIBCH20	IEC: Entrepreneurial Biochemistry	The course provides detailed knowledge on ideas, opportunities and components necessary for bio-entrepreneurship.	Integrate issues of social relevance in the field of study.	Evaluate ideas and evidence rationally to produce and implement solution to the socially relevant problem	Identify and implement the role of entrepreneur towards society.
M.Sc. Chemistry	PCCHA20	Stereo Chemistry and Conformational Analysis	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long	Assign the configuration of stereoisomers including those with no stereogenic carbon centre and classify the stereospecific and

			opportunities outside the country.	concepts towards skill development and employability.	learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	stereoselective reactions. Compare the relative stability and reactivity of conformational isomers of cyclohexane and related compounds. Ascertain the knowledge on the mechanism and stereo chemical outcome of aliphatic nucleophilic substitution reactions. Compare the mechanistic spectra of elimination reactions. Employ the principles of Optical Rotatory Dispersion and Circular Dichroism for various applications.

M.Sc. Chemistry	PCCHB20	Structural Inorganic Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Summarize the theories of acids and bases.Discuss conductors, semiconductors and insulators based on band theory.Assess the structure and bonding in different types of ionic solids, metals and alloys.Discuss the structure and bonding in polyacids, silicates and inorganic polymers. Distinguish the structure and bonding in boranes, carborne, metallo carborne, boron nitrides and metal clusters.

M.Sc. Chemistry	PCCHC20	Kinetics and Photo Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Describe Activated Complex Theory in terms of translational and vibrational partition functions and apply it to derive the kinetics of reactions in solutions, Hammett and Taft equations and kinetic isotope effects in studying the mechanism of chemical reactions. Discuss the concepts and kinetics of homogeneous and heterogeneous catalysis and explain adsorption isotherms of Langmuir and BET. Derive the kinetics of complex reactions and apply the techniques of fast reactions. Analyze the principals involved in photo excitation of

						molecules. Derive the kinetics of photochemical reactions, and explain the applications of radiation chemistry, kinetics of photochemical reactions, solar energy conversion and radiolysis of water.
M.Sc. Chemistry	PECHA20	Elective I A: Polymer Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to	Classify polymers and illustrate the types of polymerization techniques. Illustrate the characterization techniques such as XRD, TGA, DSC, SEM and TEM. Discuss the polymer reactions and degradation. Evaluate polymer processing techniques in industries, determine molecular

					address the problems and find solutions.	weight of polymers by selected methods such as GPC, osmometry, viscometry, ultracentrifugation and MALDI methods. Compile the synthesis, properties and applications of polymers and biopolymers.
M.Sc. Chemistry	PECHB20	Elective I B: Nano chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to	Discuss the basic concepts of nano chemistry including theories of nano chemistry, and to classify the various types of nano systems. Explain the different methods and techniques of synthesizing nanoparticles. Discuss the characterization of the nanomaterials. Explain the

					address the problems and find solutions.	applications of nano chemistry in optics, electronics, and sensors. Outline the biomedical application of nanoparticles.
M.Sc. Chemistry	PCCHD20	Organic Reactions and Mechanisms	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Discuss the oxidation of organic compounds using selected oxidizing reagents. Discuss the reduction of organic compounds using selected reducing reagents. Describe the mechanisms of various rearrangement reactions and their applications. Explain the reaction mechanisms and applications of selected named reactions. Illustrate the types of photo chemical

						reactions, classify pericyclic reactions, and examine the correlation diagram for butadiene-cyclobutene system.
M.Sc. Chemistry	PCCHE20	Advanced Coordination Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Interpret the stability of complexes and explain the applications of various macrocyclic ligands. Explain and analyse the concepts of CFT, MOT and Jahn Teller distortion. Analyse the absorption spectra and determine magnetic susceptibility of metal complexes by different methods. Discuss the electron transfer reaction mechanisms and their importance in biological systems. Explain the reactivity

						and mechanisms of square planar and octahedral complexes and appraise the applications of complexes in various fields.
M.Sc. Chemistry	PCCHF20	Group Theory and Quantum Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Identify symmetry operations and assign point groups of molecules. Construct the character tables for C_{2v} and C_{3v} point groups, apply the concepts of symmetry in molecular vibrations, chemical bonding, and electronic transitions. Identify the limitations of classical mechanics, apply quantum chemistry to solve Schrödinger wave equation for one, two- and three-

						dimensional boxes and for hydrogen atom and helium ion. Discuss classical and quantum mechanical treatments of one-dimensional harmonic oscillator, calculate the rotational constant and bond length of diatomic molecules. Discuss and apply the approximation methods to single and multi-electron systems, apply the MO theory to di and polyatomic molecules, explain the application of HMO theory to ethylene, butadiene, and benzene.
M.Sc. Chemistry	PECHC20	Elective IIA: Pharmaceutical Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the	Attain an in-depth knowledge in the respective domains augmented through self- learning.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented	Classify the pharmaceutical drugs and explain the mechanism of drug action and absorption

			institutions abroad as well as employment opportunities outside the country.	Assimilate and apply principles and concepts towards skill development and employability.	through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	of drugs. Elaborate the biological role of important inorganic compounds and the drugs used in the treatment of mental disorders. Summarize the methods of drug design and development. Review the causes of cancer and its treatment, and to assess the mechanism and the mode of action of anticancer drugs. Formulate the different types of Nutraceuticals and their applications, and to justify the role of anticoagulants in the treatment of blood disorder.

M.Sc. Chemistry	PECHD20	Elective IIB: Medicinal Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Explain the designing of drugs by different approaches. Define the physiochemical properties of drug molecules, and illustrate pharmacophore, toxicophoric, melanophore and interchangeable bio isosteres. Describe the nature of drug receptors and their binding interactions. Explain the stereochemical properties and biological activity of drug molecules, and to identify the properties of drug molecules by quantum mechanics and molecular mechanics.

						Describe the physiological and pathological approaches while designing newer drugs for newer diseases, and to Discuss the biological activity of steroids and radioisotopes.
M.Sc. Chemistry	PCCHG20	Practical I: Organic Chemistry I	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Apply critical and scientific approaches to address problems and find solutions. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Demonstrate an ability to conduct experiments and perform accurate quantitative measurements with an understanding of the theory and	Identify the components in two component mixture and detect the functional groups. Prepare the organic compounds and purify them. Perform common laboratory techniques like separation, refluxing, recrystallization, vacuum filtration, and sublimation.

					develop practical skills in handling analytical instruments. : Interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	
M.Sc. Chemistry	PCCHH20	Practical II: Inorganic Chemistry I	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the	Attain an in-depth knowledge in the respective domains augmented through self- learning. Apply critical and scientific approaches to address problems	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal	Demonstrate group separation and analysis of inorganic mixtures.Identify rare and common ions present in the inorganic mixtures.Prepare

			country.	and find solutions. Develop research skills through multi/inter/trans-disciplinary perspectives.	and societal progress. Demonstrate an ability to conduct experiments and perform accurate quantitative measurements with an understanding of the theory and develop practical skills in handling analytical instruments. Interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems	selected inorganic complexes.Estimate the metal ions present in the sample by colorimetric method.

					and find solutions.	
M.Sc. Chemistry	PCCHI20	Practical III: Physical Chemistry I	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Apply critical and scientific approaches to address problems and find solutions. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Demonstrate an ability to conduct experiments and perform accurate quantitative measurements with an understanding of the theory and develop practical skills in handling analytical instruments. : Interpret experimental results, perform calculations on these results and draw reasonable,	Prepare the solutions of different concentrations. Experiment and calculate the rate constant of ester hydrolysis and primary salt effect. Determine the order and energy of activation using kinetics. Construct and analyze phase diagrams, and examine the validity of Freundlich and Langmuir adsorption isotherms. Determine the rate constant using polarimeter and stability constant using photo colorimeter, and develop skills in handling colorimeter

					accurate conclusions. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	and polarimeter.
M.Sc. Chemistry	PCCHJ20	Synthetic Organic Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems	Analyze and evaluate the concepts of retrosynthesis, disconnection approach and protection of common functional groups and apply them in synthesizing target molecules. Evaluate the methods of asymmetric synthesis and resolution. Analyze the preparation and uses of selected organic

					and find solutions.	reagents. Evaluate the role of PTC in organic synthesis. Appraise the role of transition metals in selected named reactions and plan chemo selective, regioselective and stereoselective named reactions.
M.Sc. Chemistry	PCCHK20	Molecular Spectroscopy	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific	Apply Ultraviolet spectroscopy for the identification of organic compounds and inorganic complexes, and to interpret the IR spectra of organic compounds and inorganic complexes. Discuss the different ionization techniques involved in Mass spectroscopy, principle of GC-MS

					approaches to address the problems and find solutions.	and its advantages over MS, and to elucidate the molecular formulae and structures of unknown compounds using Mass spectroscopy. Analyze the splitting pattern in the 1H, 13C, 19F and 31P NMR spectra for structural determination. Discuss the principle, instrumentation and applications of Mossbauer spectroscopy and analyze the Mossbauer spectra of iron and tin compounds. Explain hyper fine splitting in EPR and interpret EPR spectra of simple radicals and

						complexes, and to explain the electronic spectra for chemical analysis. Elaborate on the concepts and theories of microwave, IR, rotational and vibrational Raman, and electronic spectroscopy.
M.Sc. Chemistry	PCCHL20	Electro Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to	Examine the concepts and theories of strong electrolytes and verify the Debye Huckle Onsager equation. Explain the principle and application of various analytical techniques. Compare the structure of double layers. Examine and predict the kinetics of electrode reaction of single step and multistep and discuss

					address the problems and find solutions.	the theories and mechanism of corrosion and passivation. Classify the types of fuel cells and ion selective electrodes.
M.Sc. Chemistry	PECHE20	Elective III A: Analytical Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Compare different thermal methods of analysis and explain their applications in material science. Elaborate the principle, instrumentations of the Gas, HPLC and SCF chromatographic techniques and their applications. Examine the identification of metal ions using AAS and photo acoustic spectroscopy. Solve simple problems in chemistry using ‘C’ program.

						Analyze the importance of Green Chemistry and its impact on the sustainable environment and the quality of water.
M.Sc. Chemistry	PECHF20	Elective III B: Green Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Explain the goals and progress of green chemistry. Summarize the principle of green chemistry and green reactions. Discuss the good laboratory practices and designing of green synthesis, and to explain the mechanism and applications of certain named reactions and rearrangements. Explain selected green preparations. Analyze the future trends in green

						chemistry.
M.Sc. Chemistry	PICHG20	Research Methodology	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Apply critical and scientific approaches to address problems and find solutions. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions.	Define research and its objectives, illustrate hypothesis testing, and draw the research plan. Carry out literature search offline and online to fix the research problem and illustrate the importance of IF, SCI, h index and i-index. Apply statistical analysis in research methodology. Describe the general format of thesis writing and the research ethics to be followed. Illustrate the safety measures to be taken in handling toxic, inflammable and explosive chemicals.

M.Sc. Chemistry	PCCHM20	Natural Products and Bioorganic Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Examine the synthesis and reactions of selected heterocyclic pigments, nucleic acids, vitamins and alkaloids. Evaluate the biosynthesis and metabolism of lipids, cholesterol and hormones. Explain the metabolic pathway of amino acids and proteins and to analyze the structural aspects of proteins. Elaborate the role and metabolism of nucleic acids, genetic code, transcription and translation. Describe the structure and biological role of enzymes (α-chymotrypsin) and cofactors.

M.Sc. Chemistry	PCCHN20	Solid State Chemistry and Nuclear Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Sketch the structures of perovskite, CdI, NiAs, spinels, explain electrical, magnetic and optical properties of solids, compare different methods of solid-state reactions and demonstrate selected single crystal growth techniques. Discuss the magnetic properties of nuclides. Describe quark theory and salient features of nuclear models. Illustrate the types of nuclear reactions, explain the applications of radioisotopes in neutron activation analysis, isotope dilution analysis and age determination. Compare the different types of

						particle detectors, accelerators and explain the knowledge on Nuclear Waste Management.
M.Sc. Chemistry	PCCHO20	Thermodynamics	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Determine the partial molar properties, activity and activity coefficient of non-electrolytes, and standard free energies.Illustrate the relationship between microscopic properties of individual atoms and molecules with macroscopic thermodynamic observables and derive the different types of distribution laws.Derive different forms of molecular partition function, heat capacity of solids and explain law of equipartition of

						energy.Distinguish the nuclear spin states of hydrogen and deuterium, explain electron gas in metals and blackbody radiation, and apply spectroscopic data for statistical thermodynamics. Explain the concept of non-equilibrium thermodynamics, and derive entropy production in chemical reactions and open systems.
M.Sc. Chemistry	PECHG20	Elective IV A: Organometallic and Bioinorganic Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply	Explain the preparation, properties, structure and bonding of organometallic complexes and appraise 18 electron rule and EAN rule for metal carbonyls. Explain the

					principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	mechanism of organometallic reactions, rearrangement reactions of aluminum and tin compounds. Appraise the role of transition metal catalysts in industrial processes. Evaluate the role of oxygen transport, ion transport and electrolytic balance in organisms, and review nitrogen fixation. Elaborate on the biological role of metalloenzymes, and the importance of metals used for diagnosis and treatment of cancer.

M.Sc. Chemistry	PECHH20	Elective IV B: Organic Farming and Solid Waste Management	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Elaborate the concept of organic farming. Explain the vision and importance of organic farming movements, apply vermicomposting process and prepare bio-fertilizers. Evaluate the technology to approach the benefits of organic farming. Explain the various aspects of solid waste management. Demonstrate the methods to reduce hazards.
M.Sc. Chemistry	PCCHP20	Practical IV: Organic Chemistry II	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal	Develop skills to perform two stage preparations of organic compounds and crystallize them. Calculate the saponification value of oil.

			country.	skill development and employability.	and societal progress. Demonstrate an ability to conduct experiments and perform accurate quantitative measurements with an understanding of the theory and develop practical skills in handling analytical instruments. Interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Estimate the amount of the given organic compound. Demonstrate simple chromatographic techniques. Interpret the structure of organic compounds by analyzing spectral data.

M.Sc. Chemistry	PCCHQ20	Practical V: Inorganic Chemistry II	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Apply critical and scientific approaches to address problems and find solutions. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Demonstrate an ability to conduct experiments and perform accurate quantitative measurements with an understanding of the theory and develop practical skills in handling analytical instruments. : Interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions.	Estimate the amount of metal ions in inorganic mixtures by volumetric and gravimetric methods. Estimate the percentage of metals in ores and alloys by volumetric and gravimetric methods. Prepare selected inorganic complexes. Interpret the spectra of selected inorganic compounds.

					Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	
M.Sc. Chemistry	PCCHR20	Practical VI: Physical Chemistry II	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Demonstrate an ability to conduct experiments and perform accurate quantitative measurements with an understanding of the theory and develop practical	Apply laboratory skills to perform physio-chemical experiments. Demonstrate acid-base, redox and precipitation titrations using conductometry and potentiometry. Determine the pH of buffer solution potentiometrically and verify Ostwald dilution law and Onsager's equation. Interpret the experimental results obtained by

					skills in handling analytical instruments. : Interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	conductometric and potentiometric titrations. Describe spectral methods to calculate force constant and interpret UV, IR and NMR spectra.
M.Sc. Chemistry	PICHA20	Dairy Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress.	Summarize the knowledge on dairy products, processing, and their applications. Discuss the physical and chemical properties of milk. Explain the different processing techniques

				and employability.	Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	of milk. Explain marketing of milk and apply skills in detecting adulterants in milk products. Describe the nutritive value of milk and chemistry of dairy products in bone and muscle formation.
M.Sc. Chemistry	PICHB20	Quality Control and Chemical Analysis	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to	Define quality control, quality assurance and describe the necessity of TQM. Apply standards and specifications in quality control. Discuss the testing methods involved in quality control of food and textile industries. Evaluate quality analysis of water, soil, and air. Demonstrate the basics of good

					address the problems and find solutions.	laboratory practices and describe the importance of sampling, documenting and usage of computer aids in QC labs.
M.Sc. Chemistry	PICHD20	Water Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability. Apply critical and scientific approaches to address problems and find solutions. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Explain the physical and chemical properties of water. Describe the instruments used for water quality monitoring. Examine the physical, chemical and biological pollutants in water. Demonstrate the treatment methods used for recycling of waste water. Explain the policies and laws related to water in Indian constitution.

M.Sc. Chemistry	PICHF20	Forensic Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well as employment opportunities outside the country.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning, persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Explain the need, scope, and functions of forensic science.Discuss the mode of action and chemical properties of poisons.Explain the isolation, sample preparation and identification of forensic samples.Outline the qualitative and quantitative determination of forensic samples by analytical methods. Demonstrate the process of lie detection and fingerprint detection.
M.Sc. Chemistry	PICHI20	Advanced Instrumentation Techniques	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning,	Outline the working principle of NMR, ESR and Mossbauer spectroscopy with selected applications. Summarize the

			as employment opportunities outside the country.	principles and concepts towards skill development and employability.	persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	operating principle, sample preparation and imaging modes of XPS, AES, SEM, TEM, etc. Outline the working principle of separation techniques such as HPLC, NP-HPLC, RP-HPLC, CZE, ICP and hyphenated techniques. Define the principle of voltammetry such as LSV, AWV, DPV and theory and applications of Cyclic Voltammetry. Outline the methods of monitoring air and water pollution.
M.Sc. Chemistry	PICHJ20	Leather Chemistry	The courses are designed to meet the global requirements and enables students to pursue higher education in the institutions abroad as well	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply	Attain an in-depth knowledge on advanced concepts in various branches of chemistry augmented through self-learning,	Outline the tanning processes in leather industry. Discuss the cleaner technology in leather industry.

			as employment opportunities outside the country.	principles and concepts towards skill development and employability.	persist in life-long learning for personal and societal progress. Assimilate and apply principles and concepts towards skill development, employability, critical and scientific approaches to address the problems and find solutions.	Illustrate the chrome tanning process. Outline the mechanism of tanning and role of surface charge and importance of electrostatic, H-bond, dipole-dipole and hydrophobic interactions. Apply waste water management and zero discharge approaches in leather industry.
M.Sc. Chemistry	PNHRA20	Human Rights	This course educates the students about the Universal Declaration and International Covenants on Human Rights.	Attain an in-depth knowledge in the respective domains augmented through self- learning		Obtain knowledge and understand about fundamental Human Rights Understanding of the concepts of Indian constitution and to emphasize its importance Promote knowledge in understanding the concept of Universal Declaration and

						International Covenants on Human Rights. To strengthen the promotion and protection of human rights around the globe. Promote awareness on the Indian legal system, rule of law, human rights related policies, Acts and movements
M.Sc. Computer Science	PCCSC20	Research Methodology	To gain familiarity with a phenomenon or to achieve new insights into it.	Develop research skills through multi/inter/trans-disciplinary perspectives.	Contribute significantly to the research and the discovery of new knowledge and methods in the field of computer science.	Understand the concepts of research design, research process and various types of research.
M.Sc. Computer Science	PECSB20	Elective I B: Cyber Security	Understand key terms and concepts in cyber law, intellectual property and cybercrimes, trademarks and domain theft.	Apply critical and scientific approaches to address problems and find solutions.	To design, implement, and evaluate a computer-based system, process, component, or program for	Assess cyber security risk management policies in order to adequately protect an organization's critical information and

					various applications.	assets.
M.Sc. Computer Science	PCCSF20	Machine Learning	To understands complexity of Machine Learning algorithms and their limitations.	Assimilate and apply principles and concepts towards skill development &employability	Ability to learn & apply advance concepts to generate novel solutions for solving complex computational problems.	Understand the basics of Machine Learning
M.Sc. Computer Science	PCCSG20	Open Source Programming	Understand how server-side programming works on the web	Assimilate and apply principles and concepts towards skill development &employability	Ability to learn & apply advance concepts to generate novel solutions for solving complex computational problems.	Familiar with basis syntax of PHP, common PHP scripts elements and creating of the server-side scripting using PHP, implement PHP database connectivity, perform operation on database and open source database management system.
M.Sc. Computer Science	PCCSH20	Wireless Communications and Networks	To provide an overview of Wireless Communication Networks area and its applications	Attain an in-depth knowledge in the respective domains augmented through self-learning.	To design, implement, and evaluate a computer-based system, process, component, or program for various applications.	Classify different technologies followed in various generation of cellular networks

M.Sc. Computer Science	PCCSL20	Web Services	To understand Web Services and its implementation model	Assimilate and apply principles and concepts towards skill development &employability	Contribute significantly to the research and the discovery of new knowledge and methods in the field of computer science.	Able to apply SOAP, HTTP and UDDI services in the web applications
M.Sc. Computer Science	PCCSM20	Distributed and Cloud Computing	To explain distributed system and cloud models	Attain an in-depth knowledge in the respective domains augmented through self-learning	To design, implement, and evaluate a computer-based system, process, component, or program for various applications	Understand the concepts of cloud Architecture and its services
M.Sc. Computer Science	PECSE20	Elective IIIA: Internet of Things	To understand smart objects and IoT Architectures	Attain an in-depth knowledge in the respective domains augmented through self-learning	Contribute significantly to the research and the discovery of new knowledge and methods in the field of computer science.	Understand the fundamentals of IoT.
M.Sc. Computer Science	PECSF20	Elective III B: Multimedia Communication	Understanding the Multimedia Communications Systems, Application and Basic Principles	Assimilate and apply principles and concepts towards skill development &employability.	To apply fundamental knowledge of computing and science relevant to the discipline.	Understand the system design principles of multimedia communications systems

M.Sc. Computer Science	PECSG20	Elective IV A: Big Data Analytics	To learn more about the trends in Big Data and how they impact the business world like Risk Marketing – Healthcare - Financial Services - etc.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Define the big data, types of data and understand the need of big data analytics
M.Sc. Computer Science	PICSD20	Wireless Sensor Networks	Understand the challenges and applications of WSN	Attain an in-depth knowledge in the respective domains augmented through self-learning.	To design, implement, and evaluate a computer-based system, process, component, or program for various applications.	Understand the concepts of Wireless Technology and supporting Protocols.
M.Sc. Computer Science	PICSF20	Steganography and Digital Watermarking	To provide the importance of digital watermarking and Steganography	An in-depth knowledge in the respective domains augmented through self-learning.	Contribute significantly to the research and the discovery of new knowledge and methods in the field of computer science.	Discuss the need for watermarking and steganography
M.Sc. Computer Science	PICSG20	Cloud Solution with Azure	To study the decision on adoption of cloud computing by a prospective cloud services consumer enterprise, including possible significant benefits of its	Attain an in-depth knowledge in the respective domains augmented through self-learning.	To apply fundamental knowledge of computing and science relevant to the discipline.	Understand the basics of Cloud Computing with Azure and its services.

			adoption, in order to ensure informed and accountable information technology (IT) related decision-making.			
M.Sc. Computer Science	PICSH20	Introduction to Block chain Technology	Understand how blockchain systems (mainly Bitcoin and Ethereum) work	Attain an in-depth knowledge in the respective domains augmented through self-learning.	To apply fundamental knowledge of computing and science relevant to the discipline.	Understand design principles of Bitcoin and Ethereum
M.Sc. Electronic Media	PCEMA20	Mass Communication and Journalism	To introduce the broad field of mass communication and journalism to students including the models, theories and ethics in the field of media	Attain an in-depth knowledge in the respective domains augmented Through self-learning.	To obtain wide Knowledge in the area of Electronic Media Production and demonstrate Clear and coherent communication skills.	Review the Basics of Communication and Mass Culture.
M.Sc. Electronic Media	PCEMB20	Broadcasting in India	To initiate students to the field of broadcasting by tracing the evolution, and teaching programme formats and convergence of broadcast media	Attain an in-depth knowledge in the respective domains augmented Through self-learning.	To obtain wide Knowledge in the area of Electronic Media Production and demonstrate Clear and coherent communication skills.	Examine the Broadcast Regulations and Convergence of Media.

M.Sc. Electronic Media	PCEMC20	Videography	To acquire the knowledge and skill to select and apply those aesthetic elements to translate significant ideas into significant messages through Videography.	Assimilate and apply principles and concepts towards skill development And employability.	To Assimilate and apply Video and Audio editing techniques, Multimedia, and Web Designing Projects towards skill development and employability.	Evaluate the Camera Operation and Lighting Techniques in Indoor Production.
M.Sc. Electronic Media	PCEMD20	Practical I – Video Production	To give a hands-on experience to students in the handling of video-cameras and practice the techniques of Video Production.	Assimilate and apply principles and concepts towards skill development And employability.	To Assimilate and apply Video and Audio editing techniques, Multimedia, and Web Designing Projects towards skill development and employability.	Acquiring and applying knowledge in shots, angles and camera movements.
M.Sc. Electronic Media	PIEMA20	Independent Elective –Radio and Television News casting	To specialize in Radio and Television and gain analytical, technical and practical skills and be equipped in the broadcast marketplace.	Integrate issues of social relevance in the field of study.	To obtain wide Knowledge in the area of Electronic Media Production and demonstrateClear and coherent	Evaluating the components of television news and the role of Media professionals

					communication skills.	
M.Sc. Electronic Media	PCEMF20	Advanced Television Production	To prepare students for professional challenges of today and tomorrow and to expose them to real world production scenario.	Attain an in-depth knowledge in the respective domains augmented Through self-learning.	. To obtain wide Knowledge in the area of Electronic Media Production and demonstrate Clear and coherent communication skills.	Acquiring the knowledge on Production management and production elements.
M.Sc. Electronic Media	PCEMG20	Radio Programme Production	To introduce students to the principles of sounds and the art of making audio programmes	Attain an in-depth knowledge in the respective domains augmented Through self-learning.	To obtain wide Knowledge in the area of Electronic Media Production and demonstrate Clear and coherent communication skills.	Acquiring the knowledge on Production management and production elements.
M.Sc. Electronic Media	PCEMH20	Media Analysis Techniques	To introduce the basic media analysis techniques with practice applications in order to develop a critical perspective of media texts.	Apply critical and scientific approaches to address problems and find solutions.	To Assimilate the critical and scientific approaches to address the Research problems and Find solutions.	Examine the Concept of Sociological and Discourse Analysis.

M.Sc. Electronic Media	PCEMI20	Practical III – Non Linear Editing	To teach students the art of editing audio and video through Nuendo/ Adobe Audio Editing and Final Cut Pro software respectively and to complete basic exercises in editing.	Assimilate and apply principles and concepts towards skill development And employability.	To Integrate the issues of social and Ethical relevance in the field of Documentary and Short film Production.	Develop the various formats of Programme Production.
M.Sc. Electronic Media	PCEMJ20	Practical IV – Project : Production	To train students in shooting and directing a short-film or documentary, by putting into practice the various techniques learned in Video and Audio production and Script writing and Direction.	Persist in life-long learning for personal and societal progress.	To Integrate the issues of social and Ethical relevance in the field of Documentary and Short film Production.	Executing the Production process of Documentary/short film
M.Sc. Electronic Media	PEEMC20	Elective II A: Inter-Cultural Communication	To initiate students to the challenges in global communication in the age of cross-culture communication	Develop research skills through multi/inter/trans-disciplinary perspectives.	To become ethically committed media professionals and entrepreneurs by adhering to Human values, the Indian and the Global cultures.	Evaluating the Relationship Between Intercultural Communications in News Media Production.

M.Sc. Electronic Media	PEEMD20	Elective II B: Mobile Communication	It is particularly aimed at equipping with Wireless Communication students with advanced communication theory and technologies, vital for a successful career in digital economy.	Develop research skills through multi/inter/trans-disciplinary perspectives.	.To obtain wide Knowledge in the area of Electronic Media Production and demonstrate Clear and coherent communication skills.	Evaluating the various kinds of wireless network and its uses.
M.Sc. Electronic Media	PCEMK20	Film Studies	To provide in-depth knowledge on films, to develop a critically informed sense of the history and development of film conventions, both mainstream and alternative, and understand the language and use of films.	Persist in life-long learning for personal and societal progress.	To Integrate the issues of social and Ethical relevance in the field of Documentary and Short film Production.	Analysing the concept of film as an art and characteristics of films.
M.Sc. Electronic Media	PCEML20	Communication Research Methods	To teach in detail the need for communication research and the techniques and process of research studies in the field of Media	Develop research skills through multi/inter/trans-disciplinary perspectives.	To Assimilate the critical and scientific approaches to address the Research problems and Find solutions.	Acquiring the knowledge on research report writing and presentation.

M.Sc. Electronic Media	PCEMM20	Public Relations & Corporate Communication	To initiate students to the field of Public Relations and Corporate Communication by giving them a background, trends and techniques in PR	Persist in life-long learning for personal and societal progress.	To become ethically committed media professionals and entrepreneurs by adhering to Human values, the Indian and the Global cultures.	Analysing the role of PR in press and other media relations.
M.Sc. Electronic Media	PCEMO20	Practical VI – Basics 3D Graphics and Animations	To enable students to learn the art of 3D animation and modelling using 3D graphics software.	Assimilate and apply principles and concepts towards skill developmentAnd employability.	To Assimilate and apply Video and Audio editing techniques, Multimedia, and WebDesigning Projects towards skill development and employability.	Compile the Concept of Lighting and Camera effect in 3d Animation.
M.Sc. Electronic Media	PEEME20	Elective III A: Technical Business Communication	To initiate students to the types and techniques of organizational communication	Persist in life-long learning for personal and societal progress.	To acquire primary Research skills, and understand the importance of innovations, Incubation and entrepreneurship.	Assessing the importance of business correspondence and the writing skills.

M.Sc. Electronic Media	PIEMC20	Independent Elective - Women And Advertising	To provide the basic understanding about the role of women in the field of advertisement and to develop career opportunities.	Persist in life-long learning for personal and societal progress.	To acquire primary Research skills, and understand the importance of innovations, Incubation and entrepreneurship.	Compiling the notable emerging women leaders in Advertising
M.Sc. Electronic Media	PCEMQ20	Development Communication	To enable students to understand the use of media in furthering development of society and the contributions of media professionals in democracy	Develop research skills through multi/inter/trans-disciplinary perspectives.	To become ethically committed media professionals and entrepreneurs by adhering to Human values, the Indian and the Global cultures.	Evaluating the role communication and empowerment strategies for development communication.
M.Sc. Electronic Media	PCEMS20	Practical VII - Research Project	To put to practice the methods of research by undertaking a study in a relevant field of media	Develop research skills through multi/inter/trans-disciplinary perspectives.	To Assimilate the critical and scientific approaches to address the Research problems and Find solutions.	Constructing the desired conclusion and writing the Research Report.
M.Sc. Electronic Media	PCEMT20	Practical VIII – Web Publishing	To teach students the art of designing advanced and dynamic websites using Adobe Dreamweaver software and Java Scripts	Assimilate and apply principles and concepts towards skill development And employability.	To Assimilate and apply Video and Audio editing techniques, Multimedia, and	Creating the Web pages and Making Links.

					Web Designing Projects towards skill development and employability.	
M.Sc. Electronic Media	PEEMG20	Elective IV A: Web Designing	To enable students to learn the basic html coding and layout design skills required for creating websites	Develop research skills through multi/inter/trans-disciplinary perspectives.	To Assimilate and apply Video and Audio editing techniques, Multimedia, and Web Designing Projects towards skill development and employability.	Evaluating the Concept for planning the Website.
M.Sc. Electronic Media	PIEMD20	Independent Elective-International Communication	To study the global communication to learn about its effects and influence on Globalization.	Develop research skills through multi/inter/trans-disciplinary perspectives.	To become ethically committed media professionals and entrepreneurs by adhering to Human values, the Indian and the Global cultures.	Evaluating the concept of disappearing borders of empowerment

M. Sc. Mathematics	PCMAA20	Modern Algebra	Course designed to demonstrate problem solving skills in the context of Modern Algebra which includes groups and fields.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to	Assess the properties of Groups and Sylow's theorem. Apply field extension property in Algebraic extensions. Get the knowledge of Transcendence e and roots of polynomial. Know about the Galois Theory. Have the knowledge on the concepts of solvability by radicals.

					develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAB20	Real Analysis - I	The course is designed to provide the concepts of Modern analysis which include Euclidean space of n dimension, metric space, functions of bounded variation, R-S integral, and Lebesgue integral.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results.	Understand n-dimensional space Rn and the metric space whose topology is uniquely determined by the algebraic structure. Deal with the

				skill development and employability.	Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. : Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	functions of bounded variations and some of their properties. Know about the Riemann-Stieltjes integral and its properties which is a generalization of the Riemann integral. Recognize the necessary and sufficient conditions for the existence of the R-S integral. Grasp the class of Lebesgue integrable functions which is defined in terms of upper and lower bounds using the Lebesgue measure of a set.

					Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAC20	Complex Analysis	course designed to demonstrate problem solving skills in the context of Complex analysis which includes analyticity, Cauchy-Riemann relations and harmonic functions.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics.	Understand the elementary theory of power series and conformality to perform the linear transformation. Solve the integration in the complex plane by using the fundamental theorems. Be familiar with Cauchy's Integral Formula and the properties of analytical functions.

					Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning	Determine the local mapping and learn the general form of Cauchy’s theorem. Have the knowledge on the concepts of solvability by radicals

					to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAD20	Differential Equations	Course designed to demonstrate problem solving skills in the context of Differential Equation which includes Ordinary differential equation and dynamical problems.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics.: Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life	Understand ordinary differential equations of various type, their solutions, and fundamental concepts about their existence.Obtain solutions of the Homogeneous equation with constant coefficient and Homogeneous equation with analytic coefficient.Comprehend the Bessel functions, Legendre equation, Legendre polynomials and Regular singular points.Know Picard’s method of obtaining successive approximations of solutions of first order

					problems.Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	differential equations.Understand Eigen values and Eigen functions of Strum-Liovuille systems, and obtain the solutions of initial and boundary value problems.
M. Sc. Mathematics	PEMAA20	Elective - I A: Differential Geometry	Course designed to understand the concept of curvature of a space curve, signed curvature of a plane curve and to	Attain an in-depth knowledge in the respective domains augmented through self- learning.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics	Understand the line integrals, deal with differential forms and calculate arc length, curvature of surfaces.

			compute the curvature and torsion of space curves.	Assimilate and apply principles and concepts towards skill development and employability.	using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations	Analyze involutes, evolutes and fundamental existence theorem for space curves. Apply problem solving with differential geometry to diverse situations in physics, engineering and in other mathematical contexts. Evaluate the fundamental forms of a surface. Compute the Gaussian curvature, the mean curvature, the curvature lines and the asymptotic lines

					approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PEMAB20	Elective - I B: Mathematical Modelling	Course designed to improve the ability to solve problems, including applications outside of mathematics, by means of intuition, creativity, guessing and the experience gained through the study of particular examples and mathematical models	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the	Understand the mathematical basis of common algorithms, and the ability to calculate accurately and efficiently. Demonstrate the use of mathematical reasoning by justifying and generalizing patterns and relationships between the variables

					outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Inculcate research-level thinking in the field of pure and applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	in the mathematical models. Formulate and qualitatively analyze mathematical models of a wide range of systems and processes. Recognize the types of Mathematical models and the complexity in each system. Recognize the power of mathematical modelling and analysis and be able to apply their understanding to their further studies.
M. Sc. Mathematics	PIMAA20	Independent Elective I A: Fundamentals of Group Theory	Course designed to demonstrate problem solving skills in the context of fundamentals of groups which includes groups and subgroups.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and	Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship	Understand the importance of various types of Groups. Extend the knowledge in some important groups (Homomorphism and

				concepts towards skill development and employability.	examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	Isomorphism) Understand the concepts of fundamentals of finite abelian groups. Acquire benefits of Sylow's theorem and classify the Class equations. Solve various objective type problems using simple concepts.
M. Sc. Mathematics	PIMAB20	Independent Elective I B: Quantitative Aptitude for Competitive Examinations-I	Course designed to enhance the problem solving abilities and improve the basic mathematical skills	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the	Understand the concepts of Number System and aptitude problems. Recollect the formulae and solve problems on profit and loss, Interest and Time and Work. Demonstrate basic understanding on data interpretation and exhibit eloquence in verbal reasoning.

					fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	Identify and respond effectively to questions on clerical ability. Recognize the type of questions and answer them confidently with efficiency in grammar.
M. Sc. Mathematics	PCMAE20	Linear Algebra	Course designed to demonstrate problem solving skills in the context of Linear Algebra which includes linear transformation and finite fields.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. : Have the capability to apply the programming	Have knowledge on Modules and Canonical form. Analyze Jordan and Rational canonical form. . Understand the concepts of linear transformation and apply it on linear operators. Understand the concepts of finite division ring. . Know about division rings having the field in their centers.

					concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	

M. Sc. Mathematics	PCMAF20	Real Analysis - II	The course is designed to provide the concepts of Modern analysis which deals with double sequence and series, Fourier series, sequences, and series of functions.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. : Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to	Understand the theory of double sequences and double series which is an extension of the single or ordinary sequences and series and identify the convergence and divergence of infinite product. Determine the properties of the Fourier coefficient and solve the problem for the orthonormal system of functions. . Identify the Convergence of a sequence and series of functions. Link the multiplication of power series, reciprocal of power series, and real power series. . Deal with the

					develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	concepts of Directional derivative, Total derivative, Chain rule, Inverse function, and Implicit function theorems.
M. Sc. Mathematics	PCMAG20	Partial Differential Equations and Integral Partial Differential Equations	Course designed to apply partial derivative equation techniques to predict the behavior of certain phenomena	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results.	Apply specific methodologies, techniques and resources to conduct research and produce innovative results. Solve problems of heat conduction

				skill development and employability.	Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. : Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	equation by using initial and boundary conditions. Use the knowledge of PDEs, to solve one dimensional wave equation by canonical equation. Solve practical PDE and integral PDE problems with finite difference methods. Develop mathematical skills to solve problems involving convolutions.

					Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAH20	Mechanics	Course designed to demonstrate problem solving skills in the context of Mechanics which includes Physics concepts and its applications to Mathematics.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics.	Define and understand basic mechanical concepts related to discrete and continuous mechanical systems. Describe and understand the motion of a mechanical system using Lagrange's equation. Use Euler-Lagrange equation to find stationary paths and understanding the theory of variational

					Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning	principles. Acquire knowledge on Hamilton's principle and Hamilton's equation. Study the concepts of canonical transformations and solve the transformations by using Lagrange and Poisson brackets.

					to compete at the global level and meet social needs.	
M. Sc. Mathematics	PEMAC20	Elective II A: LaTeX and MATLAB	Course designed to demonstrate the ability to type research papers in Latex Software in a fluent manner and to use and write the script files using MATLAB software	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Inculcate research-level thinking in the field of pure and applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	Understand the mathematical basis of common algorithms in Latex. Demonstrate the use of mathematical equations, tables and figures in Latex. Demonstrate understanding and use of MATLAB software Construct one dimensional array, two dimensional arrays and basic functions in MATLAB. Recognize the power of mathematical modelling and analysis using MATLAB and be able to apply their understanding to their

						further studies.
M. Sc. Mathematics	PEMAD20	Elective II B: Fluid Dynamics	Course designed to understand the concepts of fluid motion, equations of motion of a fluid, three dimensional flows and viscous flows and apply it in practical situations.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in	Understand the concepts of fluid flow Identify pressure of fluid in different kind of Motion Analyze the topics of Axi-Symmetric Flows, Stoke’s Stream Function Determine the Stream Function, the Complex Potential for Two-Dimensional, Irrotational, Incompressible Flow. Explain the concepts the Rate of Strain Quadric and Principal Stresses, Stress Analysis in Fluid Motion, the Coefficient of Viscosity and Laminar Flow, the Navier-Stokes Equations of Motion of a Viscous

					Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	Fluid.
M. Sc. Mathematics	PIMAC20	Independent Elective 2 A: Fundamentals of Ring Theory	Course designed to demonstrate problem solving skills in the context of Fundamentals of Ring theory which includes Rings, Sub rings and Types of Rings.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and	Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship	Demonstrate various characteristic of Rings.Extend the knowledge in Ideals, Fields of Quotients and polynomial rings.Validate

				concepts towards skill development and employability.	examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	primitive polynomials and Irreducible Polynomials.Acquire the knowledge in Field theory.Solve various types of problems in finite fields.
M. Sc. Mathematics	PIMAD20	Independent Elective 2 B: Quantitative Aptitude for Competitive Examinations-II	Course designed to introduce quantitative methods and techniques for effective decisions–making and solve aptitude problems.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	Understand and solve aptitude problems. Identify and develop the techniques to solve the problems using different methods. Demonstrate procedural fluency with real number arithmetic operations and use those operations to represent real-world scenarios and to solve stated problems. Solve linear equations, graph and interpret linear models, and read and

						apply formulas. Ability to face the competitive examinations with a clear approach.
M. Sc. Mathematics	PCMAI20	Topology	To introduce the topological spaces which provide a general framework for the study of convergence, continuity, and compactness and to train the students to develop analytical thinking.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model,	Understand basis as a collection of basic open sets and the concepts of continuous functions and their properties in topological spaces. CO Determine the topology generated by the given basis, connectedness, path connectedness of the product of an arbitrary family of spaces. . Grasp the concept of compactness which is the generalization to topological spaces of the property of closed and bounded subsets of the real line. Deal with the

					formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	countability and separation axioms . Know the theorems with the conditions under which a topological space can be embedded in metric space.

M. Sc. Mathematics	PCMAJ20	Numerical Analysis	To develop the skills in solving Numerical problems and apply them in other disciplines and in wider areas of research.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to	Find the solution in Numerical, Algebraic and transcendental equations. Solve the set of algebraic equations by direct and iterative methods. Analyze the values of a function for any intermediate value of the independent variable. Compute the numerical solution of various types of ordinary differential equations. Acquire the numerical solution of Partial Differential Equations.

					develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAK20	Probability Theory	To understand the concept of random variables, characteristic functions, probability distribution, and limit theorem and to solve real-world problems.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results.	Characterize probability models and function of random variables based on single and multiple random variables. Evaluate and apply

				skill development and employability.	Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	expected value, moments and understand the concept of Chebyshev inequality. Analyze the concepts of characteristic functions and its properties. Apply probability distribution to solve the real world problems. . Understand the concept of limit theorem and its applications.

					Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAL20	Operations Research	To understand the mathematical tools used in Operations Research that are needed to solve the optimization problems which plays important role in business management.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics.	Determine the feasible solution using Revised simplex method, Duality and bounded variable algorithm. Understand the theoretical background of queuing systems and solve the real world problems. Analyze the Inventory models and solve EOQ models. Apply dynamic programming to solve

					: Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning	real world problems. Solve constrained and unconstrained optimization problems using Hookes and Jeeves algorithm, Gradient projection, Lagrange multipliers, Kuhn-Tucker conditions etc.

					to compete at the global level and meet social needs	
M. Sc. Mathematics	PEMAE20	Elective III A: Programming with Java	To develop knowledge in a platform-independent High-Level Programming Language Java to handle complex projects in advanced technologies.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Inculcate research-level thinking in the field of pure and applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	Understand the benefits and applications of OOP and distinguish C++ and JAVA. Gain knowledge about operators and its types. Define decision making statements and solve problems based on it. Develop the program by manipulating classes and methods in the Java programming language. Explore the Java programming by using arrays.

M. Sc. Mathematics	PEMAG20	Elective III B: Programming with R	To learn the advanced language R that performs various complex statistical computations and calculations.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	: Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Inculcate research-level thinking in the field of pure and applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	Familiarize with basics of R software and built in function of R.. Identify the characteristics of datasets and plot the datasets in R using graphical methods. Demonstrate understanding and use of for loop, if statement and break. Implement the learning techniques and computing environment that are suitable for the applications under consideration. Compute vectors and matrices, matrix inverse, eigen values and eigen vectors.

M. Sc. Mathematics	PEMAF20	Elective Practical : Java	To design and program stand-alone Java applications.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Inculcate research-level thinking in the field of pure and applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	Implement programs with classes. Write programs that perform operations using arrays. Develop the program by decision making statements and solve problems based on it. Illustrate basic programming concepts such as program flow and syntax of a high-level general purpose language. Take a problem, figure out the algorithm to solve it and write the code.
M. Sc. Mathematics	PEMAH20	Elective Practical : R	To use R for descriptive statistics and write simple programs in R.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and	Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve	Familiarize with basics of R software and built in function of R. Identify the characteristics of datasets and plot the

				concepts towards skill development and employability.	real-life problems. Inculcate research-level thinking in the field of pure and applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	datasets in R using graphical methods. Demonstrate understanding and use data frames. Implement the learning techniques and computing environment that are suitable for the applications under consideration. Compute vectors and matrices, matrix inverse, eigen values and eigen vectors.
M. Sc. Mathematics	PIMAE20	Independent Elective 3 A: Skill Enhancement in Real and Complex Analysis - I	To develop in-depth knowledge in analysis and problem-solving skills to work out unsolved problems using various tricks to clear CSIR NET, SET, JRF, and GATE examinations. Also, to train the students in self-paced independent learning.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	Utilize the basics of set theory and number system. Acquire the knowledge of Sequences and Series. . Compute the Limit, Continuity and Differentiation of functions. Analyze the

						Transcendental functions such as Exponential, Trigonometric and Hyperbolic Functions. Evaluate the integral by Cauchy’s Integral formula.
M. Sc. Mathematics	PIMAF20	Independent Elective 3 B: Fundamentals of Research Methodology and Statistics - I	To develop in-depth knowledge in analysis and problem-solving skills to work out unsolved problems using various tricks to clear CSIR NET, SET, JRF, and GATE examinations. Also, to train the students in self-paced independent learning.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Inculcate research-level thinking in the field of pure and	Utilize the basic concepts of Research. Prepare the review of literature.. Plan the various types of survey studies and sampling design. Study the case of Historical methods and Philosophical methods.. Classify the experimental procedure and case study of various groups.

					applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	
M. Sc. Mathematics	PCMAM20	Functional Analysis	To introduce the main structure theorems of functional analysis and to study the concepts of Banach space, Hilbert space, Banach algebra, and commutative Banach algebra.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R	Gain the knowledge of complete normed linear space and the Hahn Banach theorem. Understand the open mapping theorem, closed graph theorem, and uniform boundedness theorem and determine the concept of complete inner product space and its properties. Classify the operators into adjoint, self-adjoint, unitary and normal. Know the basic properties of Banach

					language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	Algebra and the spectrum of an element in a Banach algebra. Represent commutative Banach algebras as algebras of continuous functions.

M. Sc. Mathematics	PCMAN20	Calculus of Variations	To develop an understanding of variational problems with fixed boundaries and moving boundaries.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to	Understand the functional and its applications. Also use the Euler-Lagrange equation to find the differential equations for stationary paths. Describe Du Bois-Reymond problem and solve it. Solve differential equations for stationary paths subject to boundary conditions. Give an account of the foundations of calculus of variations and its applications in Mathematics and Physics. Apply direct methods to solve variational problems.

					develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAO20	Mathematical Statistics	To impart knowledge of statistics in various areas and to apply problem-solving techniques to solve real-world events.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results.	Understand the sample moments and their functions and analyze chi-square, Student-t, Fishers-Z distributions. Demonstrate the knowledge of the

				skill development and employability.	Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET.	properties of parametric testing procedures. .Construct tests and estimators, and derive their properties. Estimate population parameters from data sets and use the sampling distributions to compute confidence intervals for these population parameters. Learn the basic components of hypothesis testing and perform hypothesis test on population means. . Understand the basic terms used in design of experiments and use appropriate experimental designs to analyze the experimental data.

					Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PCMAP20	Project	Project-based learning gives an opportunity for the students to self-study. It encourages critical, analytical, and logical thinking in student, and expand their knowledge to gain an accurate and deep understanding of their work.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics.	

					: Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning	

					to compete at the global level and meet social needs.	
M. Sc. Mathematics	PEMAI20	Elective IV A: Graph Theory	To understand the graph theoretical concepts that can model and study many real-world problems which can be applied in a wide range of disciplines and in the area of research.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. : Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model,	Identify subgraphs, cycles, paths and connection in graphs. Analyse the cut vertices, cut edges and bonds in trees. Distinguish between the Hamiltonian and Eulerian graph. Explain the concepts of matchings and coverings in bipartite graphs. Understand the concepts of coloring and planar graphs.

					formulate and solve real-life problems. Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	

M. Sc. Mathematics	PEMAJ20	Elective IV B: Fuzzy Set Theory	To make use of a special fuzzy set to model reality better than traditional theories and to develop a research approach that can deal with problems relating to ambiguous situations.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Develop a deep interest in Advanced Mathematics and have the capability to understand the outcomes in various branches of Mathematics. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Acquire profound knowledge in Mathematics to	Distinguish between crisp set and fuzzy set through bi-valued logic and infinite-valued logic. Know about the most widely used standard fuzzy set operations. Formulate the fuzzy number which is a special case of a convex, normalized fuzzy set of the real line. Explore the fuzzy relation and its operations which is the generalization of crisp relation. Analyze the methods of decision making in fuzzy environment and their applications in LPP.

					develop a range of generic skills to qualify for the fellowship examinations approved by UGC like CSIR-NET, JRF, GATE, and SET. Develop teaching, research, and technical skills in Mathematics for employment in different sectors and enhance self-learning & life-long learning to compete at the global level and meet social needs.	
M. Sc. Mathematics	PIMAG20	Independent Elective 4 A: Skill Enhancement in Real and Complex Analysis - II	Understand the basic concepts of the research methodology to analyze real-life problems using Statistical concepts. Also, to train the students in self-paced independent learning.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards	Acquire profound knowledge in Mathematics to develop a range of generic skills to qualify for the fellowship examinations	Analyze the theory of Partial derivatives. Compute Riemann Sum and Riemann integral. Evaluate the concepts of Lebesgue measure and Lebesgue integral.

				skill development and employability.	approved by UGC like CSIR-NET, JRF, GATE, and SET.	Identify the Connectedness and Compactness. . Calculate the Residues of functions and improve the knowledge of conformal mappings.
M. Sc. Mathematics	PIMAH20	Independent Elective 4 B: Fundamentals of Research Methodology and Statistics - II	Understand the basic concepts of the research methodology to analyze real-life problems using Statistical concepts. Also, to train the students in self-paced independent learning.	Attain an in-depth knowledge in the respective domains augmented through self- learning. Assimilate and apply principles and concepts towards skill development and employability.	Attain in-depth knowledge in Pure Mathematics through theorems and Applied Mathematics using real-life examples and simulation results. Have the capability to apply the programming concepts of JAVA, MATLAB, and R language to model, formulate and solve real-life problems. Inculcate research-level thinking in the field of pure and	Analyze the needs and purpose of Experimental design. Prepare and Analyze the Questionnaire and compute the Statistical analysis of data. . Analyze the statistical data and research report. Acquire the knowledge of Action research and Educational research. . Understand the basic measures of variability, dispersion and correlation.

					applied mathematics and apply theoretical knowledge to write the dissertation using the Mathematical software LaTeX.	
M.Sc. Physics	PCPHA20	Mathematical Physics – I	Inculcate the mathematical concepts for solving problems.	Assimilate and apply principles and concepts towards skill development and employability Apply critical and scientific approaches to address problems and find solutions.	Understand the various methods in the respective field. Gain knowledge about various applications	Solve ordinary differential equations that are common in the physical-sciences. Understand the characteristics of special functions to solve the physical problems.
M.Sc. Physics	PCPHB20	Classical Mechanics	To gain knowledge about the fundamental principles of small theory of oscillations and its applications.	Assimilate and apply principles and concepts towards skill development and employability. Apply critical and scientific approaches to address problems and find solutions.	Inculcate the mathematical concepts for solving problems Gain knowledge about various applications.	Acquire knowledge about the fundamental concepts of dynamics of system of particles Use D'Alembert's principle and calculus of variations to derive the Lagrange - Hamilton formalism applicable to solve the equation of motion for any mechanical

						system Understand the essential features of canonical transformations and their applications to various systems. Describe the Hamilton-Jacobi equation and develop the skills to use them to set and solve the appropriate physical problems. Gain knowledge about the fundamental principles of small theory of oscillations and its applications.
M.Sc. Physics	PCPHC20	Statistical Mechanics	To understand the fundamental principles of thermodynamics and statistical mechanics to perform a quantitative calculations on ideal systems.	Attain an in-depth knowledge in the respective domains augmented through self-learning. Integrate issues of social relevance in the field of	Attain in depth knowledge on various areas of Physics.: Inculcate the mathematical concepts for solving problems.	Differentiate classical and quantum statistics, explain the statistical behaviour of ideal system (Maxwell, Bose & Fermi) and calculate the statistical

				study.Persist in life-long learning for personal and societal progress.		quantities. Apply the Bose-Einstein and Fermi-Dirac distributions appropriately to understand the macroscopic properties. (Black body radiation, electrons in metals, Para magnetism etc.)
M.Sc. Physics	PEPHA20	Elective I A: Electronic Devices and Applications	Analyze about the fabrication of various Integrated circuits and semiconductor devices	Apply critical and scientific approaches to address problems and find solutions.	Understand the various methods in the respective field.	To study the Timer IC and its applications. To know the principles, configuration, linear and non-linear applications of Op-amp used to design various digital circuits. To understand the concepts of combinational circuits and sequential circuits and A/D –D/A

						converters used to design advanced digital system.
M.Sc. Physics	PCPHD20	Mathematical Physics – II	To inculcate to the students the mathematical concepts for solving physical problems which arise in many branches of Physics.	Attain an in-depth knowledge in the respective domains augmented through self-learning. Assimilate and apply principles and concepts towards skill development and employability. Apply critical and scientific approaches to address problems and find solutions.	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field. Inculcate the mathematical concepts for solving problems. Become Skilled to face competitive examinations.	Apply concepts of complex analysis to evaluate definite integrals. Explain various operations of tensors and apply in many branches of science. Apply Laplace/Fourier transforms to solve mathematical problems and use Fourier transforms as an aid for analysing experimental data
M.Sc. Physics	PCPHE20	Electromagnetic Theory	To make the students understand the principles and theory of electrostatics, magneto statics.	Develop research skills through multi/inter/trans-disciplinary perspectives.	Understand the various methods in the respective field. Become Skilled to face competitive examinations.	Able to understand and apply the basic principles of electrostatics. Imbibes the wide-spread knowledge about radio communication with its mathematical

						applications.
M.Sc. Physics	PCPHF20	Quantum Mechanics – I	To impart knowledge about Quantum mechanics based on dual nature of material particles, various applications, finding solutions to problems using different approximation methods.	Assimilate and apply principles and concepts towards skill development and employability Apply critical and scientific approaches to address problems and find solutions.	Understand the various methods in the respective field. Gain knowledge about various applications	Apply the concept of Quantum mechanics to various problems. Attain knowledge about various approximation methods and their applications.
M.Sc. Physics	PEPHC20	Elective II A: Crystal Growth, Nano Science and Research Methodology	To learn the basic concepts in research methodology for pursuing future research work.	Persist in life-long learning for personal and societal progress.	Understand the various methods in the respective field. Attain interest for higher education and research	Explain the fundamental concepts behind in the formation of crystal. Understand the advanced methods of characterization instruments for crystal and nanomaterials. Provide a broad view of various approaches for the synthesis and fabrication of nanostructures and their outstanding properties useful to carry out their project

						and research work.
M.Sc. Physics	PCPHI20	Spectroscopy	To impart the knowledge about molecular spectroscopic techniques.	Attain an in-depth knowledge in the respective domains augmented through self-learning. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain in depth knowledge on various areas of Physics. Gain knowledge about various applications. Attain interest for higher education and research.	Describe theoretical background (classic and quantum) of spectroscopic techniques such as microwave, IR and Raman, NMR, NQR, ESR and Mossbauer spectroscopy. Apply solutions of the Schrodinger equations for simple systems (rigid rotor and harmonic oscillator) to real systems (rotational and vibrational) for use in determining the molecular energy levels.
M.Sc. Physics	PCPHJ20	Quantum Mechanics –II	To impart knowledge about various theories and relativistic equations related to Quantum Mechanics.	Apply critical and scientific approaches to address problems and find solutions	Understand the various methods in the respective field Gain knowledge about various applications	Attain Knowledge about relativistic Quantum Mechanics

M.Sc. Physics	PCPHK20	Microprocessor and Micro-controller	To make the students understand the concepts that are involved in the Microprocessor 8085 and Microcontroller 805	Attain an in-depth knowledge in the respective domains augmented through self-learning	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field. Gain knowledge about various applications.	Describe Hardware, different bus cycles and memory interface to 8085 Microprocessor. Develop programs using 8085 Microprocessor Instruction set and addressing modes. Describe and perform different types of peripheral interfaces to 8085 Microprocessor. Explain hardware, instruction set and addressing modes of Microcontroller 8051 and develop programming for basic operations. Describe and perform different types of external interfaces to 8051 Microcontroller.

M.Sc. Physics	PEPHE20	Elective III A: Numerical Methods and C Programming	To impart the knowledge of numerical methods for solving problems arise in physics and to equip the students with the skill of C language.	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field. Inculcate the mathematical concepts for solving problems. Gain knowledge about various applications.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Understand and apply numerical concepts to solve equations and find missing values for any physical problems Solve ordinary differential equations using numerical techniques Understand the basic concepts of C Language Understand and use various operators and arrays in C Language Develop simple programs using C language along with computational tools
M.Sc. Physics	PCPHL20	Material Science and Laser Physics	To impart knowledge about phase diagram and defects in crystals	Apply critical and scientific approaches to address problems and find solutions.	Understand the various methods in the respective field. Attain interest for higher education and research	Learn the basic principles of optical, Dielectric and Ferro Electric properties of materials To understand the principle and working

						of Lasers
M.Sc. Physics	PCPHM20	Nuclear Physics and Particle Physics	To impart knowledge about nuclear-interactions, reactions, models and basic concepts in elementary particles.	Attain an in-depth knowledge in the respective domains augmented through self-learning. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field.: Inculcate the mathematical concepts for solving problems. Attain interest for higher education and research.	Apply core concepts in physics to understand nuclear interactions, features of nuclear reactions and characteristics of radioactive decays (beta & gamma). Describe basic nuclear structure and nuclear properties by applying the mathematical theory and models (liquid drop model, Shell model, collective model, optical model etc.) Evaluate some basic nuclear parameters such as radius, BE, Q-value, nuclear spin, parity etc. Classify elementary particles (based on interactions and spin) and explain the fundamental

						concepts in particle physics (conservation laws, parity violation, interactions etc.) Study the substructure and symmetries in elementary particles (SU (2) &SU (3)); apply Quark model to find the missing particle.
M.Sc. Physics	PCPHN20	Condensed Matter Physics	To get familiarized with the different parameters associated with superconductivity and the theory of superconductivity.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field.	To relate crystal structure to symmetry, recognize the correspondence between real and reciprocal space. To develop an understanding of the dielectric properties and ordering of dipoles in ferroelectrics. To get familiar

M.Sc. Physics	PEPHG20	Elective IV A: Fiber Optics and Non-Linear Optics	To make the students understand the concepts of fiber optics, Nonlinear optics and their applications.	Attain an in-depth knowledge in the respective domains augmented through self-learning. Integrate issues of social relevance in the field of study	Attain in depth knowledge on various areas of Physics. Gain knowledge about various applications	Understand the basic principles and concepts in optical fiber and describe the properties of optical sources. Distinguish between the various types and the characteristics of optical fiber. Analyze and comparing the different fabrication process of fiber. Describe various losses and connectors in optical fiber. Understand non-linear effects in optical fiber and their applications.
M.Sc. Physics	PEPHB20	Elective I B: Electronic Communication Systems.	To make the students acquire knowledge about electronic communication systems.	Apply critical and scientific approaches to address problems and find solutions. Develop research skills through multi/inter/trans-	Gain knowledge about various applications.	Understand the orbital and functional principles of satellite communication systems. Understand the evolution of cellular

				disciplinary perspectives.		communication systems up to and beyond 3G. Understand fundamentals of wireless communications.
M.Sc. Physics	PIPHB20	IEP: Astro Physics	To make the students acquire the knowledge about the universe	Attain an in-depth knowledge in the respective domains augmented through self-learning. Apply critical and scientific approaches to address problems and find solutions.	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field. Attain interest for higher education and research.	Detail the main features and formation theories of the various types of observed galaxies, in particular the Milky Way
M.Sc. Physics	PEPHD20	Elective II B:.Electronic Instrumentation	To gain knowledge about electronic equipment's.	Apply critical and scientific approaches to address problems and find solutions.	Understand the various methods in the respective field. Gain knowledge about various applications.	Attain the knowledge of working principle of digital instruments (digital pH meter, digital storage oscilloscope, digital multimeter etc.,) Impart the knowledge in working of Bio medical instruments

						and its applicable to find out any defects in our human body and to save our life.
M.Sc. Physics	PIPHD20	IEP: Medical Physics and Instrumentation Techniques	To give a perspective about the concepts of physics involved in human body.	Apply critical and scientific approaches to address problems and find solutions.	Apply critical and scientific approaches to address problems and find solutions.	Explain the effect of pressure on human system. Explain the physics of lungs and respiratory system. Explain the physics of cardiovascular system.
M.Sc. Physics	PEPHF20	Elective III B: Advanced Optics	To provide the knowledge on optics for higher studies.	Attain an in-depth knowledge in the respective domains augmented through self-learning. Develop research skills through multi/inter/trans-disciplinary perspectives.	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field. Attain interest for higher education and research.	Understand the basic concepts of Laser theory Understand and describe the different types of Laser Explain the propagation of Laser beam Describe the principle, types and loss of optical fiber Understand the

						importance of nonlinear optics and apply the concepts of NLO to optical materials.
M.Sc. Physics	PIPHF20	IEP: Numerical Methods & Research Methodology	To impart knowledge of various concepts involved in numerical analysis	Attain an in-depth knowledge in the respective domains augmented through self-learning. Apply critical and scientific approaches to address problems and find solutions.	Inculcate the mathematical concepts for solving problems. Become Skilled to face competitive examinations. Attain interest for higher education and research	Understand and apply numerical concepts to solve equations and evaluate any integrals. Draw a good research report and impart research communication techniques
M.Sc. Physics	PEPHH20	Elective IV B: Advanced Material Science	To impart knowledge about crystallography and wide knowledge about properties of materials.	Attain an in-depth knowledge in the respective domains augmented through self-learning. Develop research skills through multi/inter/trans-disciplinary perspectives	Attain in depth knowledge on various areas of Physics. Attain interest for higher education and research	Understand the building unit of structure of crystal and their symmetry. Interpret about the magnetic properties and effects on materials Attain the knowledge of superconducting materials and problem solving.

						Pick up the ideas in lasing action, optical resonators and its applications. Get introduced all about smart, nano and magnetic materials and its Application useful to carry out the research work and fabricating the devices for public utility.
M.Sc. Physics	PIPHH20	IEP: Advanced Nuclear Physics & Spectroscopy	To impart knowledge of nucleus-based instruments and familiarize with various spectroscopic techniques.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Attain in depth knowledge on various areas of Physics. Understand the various methods in the respective field. Attain interest for higher education and research.	Explain the basic concepts of nuclear detectors and particle accelerators. Explain the basic aspects of astrophysics. Explain the principles, working and application of nuclear spectroscopic techniques (RBS, NAA, PIXE) and other applications of nuclear physics.

						Explain the basic principles, instrumentation and applications of UV spectroscopy. Explain the basic principles, instrumentation and applications of atomic absorption and emission spectroscopy.
M.Sc. Zoology	PCZOA20	Phylogeny of Invertebrates and Chordates.	Enable the Students to understand and appreciate the biodiversity and its phylogenetic diversity.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Have in-depth knowledge on animal diversity from acellular to multicellular level of organization and apply the learnt concepts in all the fields of Zoology.	Analyze the taxonomic status of Invertebrates, its origin and Evolution Categorize Respiratory, Circulatory and Urinogenital system of various classes of vertebrates. Justify adaptive radiations of annelids, mollusks, Pisces, amphibians and mammals. Explain salient

						features of invertebrate and chordates. Distinguish structural, functional and phylogenetic significance of minor phyla.
M.Sc. Zoology	PCZOB20	Molecular Biology and Genetics.	Enable to understand and apply the fine structure of gene and its function.	Apply critical and scientific approaches to address problems and find solutions.	Be technically sound in applying the Information technology and will be lifelong learners in updating to the current advancements in their respective fields.	Expand knowledge of DNA, RNA structure and understand their synthesis process. Summarize transcription and translation concepts. Describe transcriptional modification mechanism. Interpret various genetic disorders and genetic variation in metabolism. Discuss genetic recombination and analyze genetic concepts.

M.Sc. Zoology	PCZOC20	Applied Biotechnology and Microbiology.	Apply the concepts of Microbiology and Biotechnology in various fields.	Integrate issues of social relevance in the field of study.	Conduct their duty with at most honesty and adhere to ethical protocols. On the whole, be agents of social transformation to up bring their society at large.	Explain the benefits of microbes in production and value addition of food products. Apply the tools and techniques used in molecular biology. Solve the problems related to biotechnology keeping in mind the safety factor for environment and society. Discuss the basic techniques used in genetic manipulation. Biosafety and ethical issues. Explain transgenic animals and their use in research field.
M.Sc. Zoology	PEZOA20	Elective I A: Biostatistics and Computational Biology	Research Applications of Biostatistics and databases.	Apply critical and scientific approaches to address problems and find solutions.	Be technically sound in applying the Information technology and will be lifelong learners	Describe statistical population, sampling and probability. Explain and perform standard deviation,

					in updating to the current advancements in their respective fields.	Student t test and Chi square Test. Compute Correlation, Regression and ANOVA. Discuss the databases and application of search tools. Explain genomics, proteomics, drug designing and phylogenetic tree analysis.
M.Sc. Zoology	PEZOB20	Elective I B: Computational Methods for sequence analysis	Research Applications of Biological databases.	Apply critical and scientific approaches to address problems and find solutions.	Be technically sound in applying the Information technology and will be lifelong learners in updating to the current advancements in their respective fields.	Explain and classify the biological databases and its application. Describe the sequence alignment, substitution matrices, and score matrices and search tools. Analyze the evolutionary distance and boot strapping strategies. Asses the genomic

						sequences, gene finding and analyses the regulatory regions. Explain the secondary structure and gene identification.
M.Sc. Zoology	PIZOB20	Independent Elective IB: Biophysics	Enable the students to understand the basic principles of biophysics and advanced methodologies in research	Develop research skills through multi/inter/trans-disciplinary perspectives.	Gain ability to develop research aptitude/creative thinking in contemporary and current fields of interest.	Recall the basic concepts of Biophysics. Describe and apply the law of thermodynamics of the biological system and concepts of energy Explain the membrane conductivity and transport. Explain the principle techniques and application of lasers in biomedical field. Discuss the working principle, instrumentation and applications of bio-

						analytical instruments.
M.Sc. Zoology	PEZOC20	Elective II A: Biochemistry	Enable the students to understand the biological macromolecules like proteins, carbohydrates, lipids, vitamins and enzyme action.	Apply critical and scientific approaches to address problems and find solutions.	Gain ability to develop research aptitude/creative thinking in contemporary and current fields of interest.	Explain the atom and types of bonds and buffers. Explain the properties of water body fluids its biological function and Classification of Amino acids. Appraise the classification, properties and mode of action of Protein and Enzyme. Summarize the complexity of the carbohydrate metabolism. Categorize the Vitamins and its importance.

M.Sc. Zoology	PEZOD20	Elective II B: Endocrinology	Enable the students to discuss the classification and functions of endocrine glands	Develop research skills through multi/inter/trans-disciplinary perspectives.	Gain ability to develop research aptitude/creative thinking in contemporary and current fields of interest.	Discuss hormones its classification and function, the anatomy of endocrine glands, Explain Pituitary and Parathyroid Structure and Function. Comprehensive knowledge about structure and function of Pancreas and Adrenal glands. Describe the complexity of the endocrine system of invertebrates. CLO5: Elucidate hormones in development.
M.Sc. Zoology	PCZOK20	Animal Behaviour	Enable to understand the normal and abnormal behaviour and apply it in the field.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Have in-depth knowledge on animal diversity from acellular to multicellular level of organization and apply the learnt concepts in all the	Discuss the innate, acquired and group behaviors. Explain the habitat selection and foraging methods of animals. Compute the interspecific

					fields of Zoology.	behaviors. Explain about communication in animals. Analyze Social behaviors in animals.
M.Sc. Zoology	PCZOM20	Physiology and Endocrinology	Enable the students to understand the interactions between the organ systems and apply the same in research.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Have in-depth knowledge on animal diversity from acellular to multicellular level of organization and apply the learnt concepts in all the fields of Zoology.	Expand knowledge about the enzymes, digestive system and interaction of complex metabolic pathway, respiration and the adaptation at extreme conditions. Summarize the circulatory and excretory system with its structure, function and regulatory mechanism. Discuss the muscular and nervous system structure, function and regulation. Describe hormones its classification and function, the anatomy

						of endocrine glands. Interpret endocrine system with its function and regulation in reproduction.
M.Sc. Zoology	PCZON20	Developmental Biology and Immunology	Help the students to understand process of development and recent advancements.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Have in-depth knowledge on animal diversity from acellular to multicellular level of organization and apply the learnt concepts in all the fields of Zoology.	Explain the chemo differentiation in the egg during development. Describe the organizer and cellular differentiation, genetic defects, aging regeneration and teratogenesis. Discuss the various forms of asexual reproduction, artificial fertilization and stem cells. Summarize the cells of Immune system and immune response. Explain the importance of immune therapy in treatment of

						diseases.
M.Sc. Zoology	PCZOO20	Evolution	Demystify the process and changes in evolution of life.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Have in-depth knowledge on animal diversity from acellular to multicellular level of organization and apply the learnt concepts in all the fields of Zoology.	Analyse the evidences of evolution, and importance of paleontology.Compare the evolutionary theories, trends and mechanism of evolution.Justify the adaptations for successful continuation of life and extinction. Appraise the distribution of animals and geological timescale.Explain the Human origin and evolution.
M.Sc. Zoology	PIZOH20	Independent Elective IVB: General Psychology	Apply the concepts of Psychology in Field Study	Integrate issues of social relevance in the field of study.	Conduct their duty with at most honesty and adhere to ethical protocols. On the whole, be agents of social transformation to up bring their society at large.	Explain Psychology and its branches. Define concept of self and describe the theories of Personality. Discuss the need of social psychology.

						Explain Psychopathology. Apply the knowledge of psychology in different areas like forensic, family, court etc.
M.Sc. Microbiology	PCMBB20	Food, Agriculture and Environmental Microbiology	The syllabus deigned makes the learners familiarize on Food, Agriculture and Environmental aspects of Microbiology	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Acquaint a broader knowledge in the concepts of Taxonomy, molecular biology, immunology, food, environment and agricultural Microbiology, nanotechnology, forensic science and genetic engineering.	Analyse the principles in food preservation. Communicate diseases associated with food. Discuss the role of microorganisms in soil and microbial interaction. Utilize the knowledge on biogeochemical cycles to produce biofertilizers. Assess information about microbiological quality of air and water.

M.Sc. Microbiology	PCMBC20	Immunology and Immunotechnology	The course is designed to provide in depth knowledge on immune cells, immune system- its function and hybridoma technology	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Acquaint a broader knowledge in the concepts of Taxonomy, molecular biology, immunology, food, environment and agricultural Microbiology, nanotechnology, forensic science and genetic engineering.	Outline the types of immune response and discuss the role of lymphoid organs in immunity. Compile immunoglobulins and antigens. Communicate the importance of MHC in organ transplantation. Analyse the allergic responses by the immune system leading to hypersensitive conditions and auto immune disorders. Plan immunization schedule.
M.Sc. Microbiology	PEMBA20	Petroleum Microbiology	The syllabus is framed to provide an in depth understanding on the microbial communities residing in the oil reservoirs and other hydrocarbon resource	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Attain an in-depth knowledge in the anatomy and physiology of a repertoire of microorganisms with its beneficial and	Outline the importance of petroleum Microbiology and predict the impact of the microbial communities in

			environments.		harmful associations.	various petroleum fields. Design the microbial solutions to the Microbiology related problems in the petroleum industry. Discuss solutions to enhance production of oil/energy by applying concepts of production related petroleum Microbiology. Utilize biotechnological aspects in remediation of oil spills. Use apparatus for the detection of living microbial contaminants in petroleum products.
M.Sc. Microbiology	PEMBB20	Economic Microbiology	The syllabus is designed to introduce entrepreneurial skills among students to become entrepreneurs and to make	Develop research skills through multi/inter/trans-disciplinary perspectives.	Incorporate effective career with marketing, project management, business	Utilize microorganisms as biofertilizers and for vermicomposting. Analyse microbial

			their idea a reality.		development or venture capital within the biotech, pharmaceutical, medical technology or related fields.	cells as fermented products. Use yeast in and as food and feed. Demonstrate mushroom cultivation and its storage. Discuss biotechnological applications of microalgae.
M.Sc. Microbiology	PIMBA20	Public Health Microbiology	The syllabus is designed to provide in depth knowledge about significance of public health at theoretical and practical levels.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Attain an in-depth knowledge in the anatomy and physiology of a repertoire of microorganisms with its beneficial and harmful associations.	Explain the significance of public health. Communicate the mode of transmission of human diseases. Discuss the role of medically important pathogens and the diseases caused. Outline the vector complex interactions between the pathogens and host. Create awareness on hospital-acquired

						infections, prevention and its control measures.
M.Sc. Microbiology	PCMBF20	Industrial and Pharmaceutical Microbiology	The course provides an in depth understanding about industrially important organisms, strain improvement and production of major products.	Assimilate and apply principles and concepts towards skill development and employability.	Incorporate effective career with marketing, project management, business development or venture capital within the biotech, pharmaceutical, medical technology or related fields.	Outline the importance of production strain in industries. Discuss on fermenters and fermentation process. Describe the upstream and downstream processing. Analyse the steps involved in vaccine, toxoid and antisera production and evaluate the standardization of antiseptics and disinfectants. Assess good practice and regulation involved in utilizing microbial product for pharmaceutical

						applications.
M.Sc. Microbiology	PCMBO20	Textile and cosmetic Microbiology	The course is designed to provide hands-on training and acquire adequate skill required for testing the quality of cosmetics and textile materials.	Assimilate and apply principles and concepts towards skill development and employability.	Demonstrate practical skills in the use of tools, technologies and methods common to Microbiology, and apply the scientific method and hypothesis testing in the design and execution of experiments.	Utilize the techniques for decolorization of textile industrial waste. Estimate of BOD, COD and total solids in effluent sample. Demonstrate the antimicrobial activity of textile materials. Evaluate the antifungal property of treated textile materials. Enumerate microorganisms in cosmetics, perfumes and essential oils.
M.Sc. Microbiology	PIMBB20	Forensic Science	The course is designed to provide understanding of the scientific principles of crime scene investigation and reconstruction, including evidence collection and preservation.	Integrate issues of social relevance in the field of study.	Acquaint a broader knowledge in the concepts of Taxonomy, molecular biology, immunology, food, environment and agricultural	Evaluate the methods underpinning forensic science, from crime scene investigation to report evidential value within a case. Reflect on the use of various divisions of

					Microbiology, nanotechnology, forensic science and genetic engineering.	forensic science in the crime investigation. Explain the theory of DNA fingerprints, blood pattern analysis, footwear and tool mark impression evidence, and drugs of abuse in the context of Forensic Science. Utilize psychological principles in crime investigation.
M.Sc. Microbiology	PCMBJ20	Advanced Microbiology	The course provides the learners an in-depth understanding on the advanced aspects of Microbiology.	Assimilate and apply principles and concepts towards skill development and employability.	Incorporate effective career with marketing, project management, business development or venture capital within the biotech, pharmaceutical, medical technology or related fields.	Utilize microorganisms in the preparation of cosmetics. Evaluate the biological potential in samples return from satellites and solar system. Discuss the role of antimicrobial fabrics, carpets, tiles and colorants. Produce bacteriostatic sanitary napkins and towels.

						Comprehend on paper, rubber and plastic Microbiology
M.Sc. Microbiology	PEMBF20	Fungal biotechnology and Bioprospecting	This course is designed to provide an exposure to the students about the potential of fungi as food and in field of biotechnology as source of different enzymes, secondary metabolites, vitamins, polysaccharides, polyhydric alcohols, pigments, lipids, glycolipids, biofertilizers and biopesticides.	Assimilate and apply principles and concepts towards skill development and employability.	Incorporate effective career with marketing, project management, business development or venture capital within the biotech, pharmaceutical, medical technology or related fields.	Perform screening and strain development for production of different bio-molecules. Design a bioreactor with special emphasis on fungal systems. Comprehend about different secondary metabolites of fungal origin. Demonstrate methods of recombinant technology with special emphasis on fungal system. Explain the role of fungi in food and feed industries.

M.Sc. Microbiology	PCMBL20	Microbial Gene Technology	the syllabus of the course provides an insight on the concepts of genetic engineering and techniques employed in recombinant DNA technology.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Acquaint a broader knowledge in the concepts of Taxonomy, molecular biology, immunology, food, environment and agricultural Microbiology, nanotechnology, forensic science and genetic engineering.	Utilize the tools and techniques of genetic engineering and the role of DNA manipulative enzymes. Compile DNA sequencing methods. Discuss the modern tools and techniques of genomics and application of antisense technologies
M.Sc. Microbiology	PEMBG20	Microbial Nanotechnology	The syllabus is designed to provide in depth knowledge on microbial bio nanotechnology.	Attain an in-depth knowledge in the respective domains augmented through self-learning.	Acquaint a broader knowledge in the concepts of Taxonomy, molecular biology, immunology, food, environment and agricultural Microbiology, nanotechnology, forensic science and genetic engineering.	Describe about molecular nanotechnology and microbial synthesis of nanoparticles. Discuss on types, function and characterization of nanoparticles. Comprehend the use of nanoparticles in cancer therapy and in biology. Elaborate the advantages and disadvantages of

						nanoparticles.
M.Sc. Microbiology	PCMBM20	Bioethics and Biosafety	The course is designed to educate the learners on Biosafety concerns at the level of individuals, institution, society, region, country and the world.	Develop research skills through multi/inter/trans-disciplinary perspectives.	Develop ability to independently carry out a complete scientific work process with research ethics, including the understanding of theoretical background, hypothesis generation, collection and analysis of data, and interpretation and presentation of results.	Outline the principles of bioethics and explain the biosafety concerns with safeguard measures. Compile the BSA statement for the industrial production of pharmaceuticals. Adapt the WHO quality standards in food process technology. Discuss on the global scenario of patenting. Comprehend the forms of patents, patentability and process of patenting.

Controller of Examinations

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