SACRED HEART COLLEGE (AUTONOMOUS)

Tirupattur – 635 601, Tamil Nadu, S.India

Ready for Every Good Work

Resi : (04179) 220103
College : (04179) 220553
Fax : (04179) 226423

Name of the Programme: BA Economics

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ECONOMIC THOUGHT	E120	• To gain knowledge on the perception of economic thinking of mercantilism and physiocracy. • To understand the logical foundations of the Classical School in Economics. • To identify the different Neo-Classicals and their contributions in economics. • To understand the different types of demand for money in terms of Keynesian ideas. • To compare the recent Indian economic thought with classical economic thought.	• Understanding of the ancient and medieval economic thoughts. • Comparing the logical foundations of the Classical School in economics. • Developing the different Neo-Classicals and their contributions in economics • Applying the Keynesian ideas for various types of demand for money • Analysing and evaluating the modern economic ideas.	Global

2	MICRO ECONOMICS – I	E218	• To gain knowledge about the fundamentals of micro economics. • To learn the traditional method of demand analysis • To understand modern method of demand analysis • To learn the production function and its related laws. • To know the various concepts of costs and revenues.	• Understanding the fundamental division of micro economics. • Comparing traditional theories of consumer behaviour with demand analysis. • Analysing modern theories of consumer behavior with demand analysis. • Evaluating production functions and its application. • Appraising traditional and modern theories of costs and Revenues.	Global
3	MATHEMATICS FOR ECONOMICS	E219	• To give knowledge and understanding of mathematical concepts in terms of set theory. • To make the students to learn matrices and its different components. • To offer a platform for measuring skills in terms of lines and curves. • To provide mathematical techniques in derivation of various functions in economic concepts.	• Understanding set theory and its applications. • Applying matrix methods in different economic theories. • Expertizing the application of differentiation to diverse economic functions. • Constructing and measuring through graphical solutions. • Integrating economic theories with mathematical applications.	Global
4	PRINCIPLES OF ECONOMICS - I	AE106	• To introduce basic economics concepts. • To gain basic knowledge of the operation of the business economics • To understand the theory of consumer's behaviour in business. • To explore the theory of producer's	• Gaining knowledge of the basic economic principles. • Applying traditional utility analysis in business. • Analysing consumer behaviour in modern business situations. • Appraising producer behaviour in	Global

			• behaviour in business strategies. • To imparting knowledge about market structures.	• modern business. • Evaluating the role of time and competitions in market.	
5	PRINCIPLES OF ECONOMICS - II	AE206	• To understand demand forecasting methods. • To study national income concepts. • To laying down the foundation of theory of public finance • To acquire knowledge on monetary policies and Indian economic system in India. • To explore about the Indian economic issues on sectors in Indian economy.	• Acquiring knowledge in demand forecasting for Business solutions. • Enabling to understand macro economic variables. • Exploring the financial system of Indian economy. • Enable the Students to get familiarity on the reforms in banking industry in India. • Evaluation of sectoral relationship of the various sectors in Indian Economy.	Global
6	MICRO ECONOMICS – II	E317	• To teach concepts of Perfect competition and its features. • To learn imperfect competition and its price and output determination. • To understand the theory of distribution and rent theory. • To know the concept of wage and its determination. • To understand the concept and theories of interest and profit.	• Knowing the market behavior under perfect competition. • Understanding the market behavior under imperfect market. • Familiarizing the knowledge of traditional and modern theories of Rent. • Becoming a capable in the estimation of wage determination. • Applying the theories of Interest and profit.	Global
7	MACRO ECONOMICS – I	E318	• To study the basic macroeconomic concepts and national income. • To understand the theories of employment. • To learn the concept of consumption function. • To know the theories of consumption function. • To study the theories of investment function.	• Understanding the basics of national income accounting • Familiarizing with the theories of employment.. • Enabling the concepts of consumption function. • Equipping them with theories of consumption function. • Applying the theories of investment function.	Global
8	MACRO ECONOMICS – II	E419	• To study the working of IS-LM. • To learn the concepts and theories of	• Understanding the general equilibrium analysis.	

				inflation and deflation. • To understand the theories of trade cycle. • To study various economic growth models. • To know the monetary and fiscal policy	• Examining the theories of inflation and deflation • Assessing the theories of trade cycle. • Familiarizing with growth theories. • Gaining an overview of monetary and fiscal policies	Global
9	INTERNATIONAL ECONOMICS	AE405	• To study the concepts and theories of international trade. • To learn the terms of trade, dumping, and Cartel. • To understand foreign exchange control and balance of payment. • To study Foreign Exchange Market and Foreign Direct Investment. • To know different international financial institutions.	• Disseminating the concepts and theories of international trade. • Describing terms of trade, tariffs, dumping, and Cartel. • Illustrating foreign exchange control and balance of payments • Examining foreign exchange market, foreign direct investment, and foreign capital • Evaluating International financial institutions	Global
10	INTERNATIONAL ECONOMICS	E543	• To understand the theories of international trade. • To know terms of trade and tariffs among trading countries. • To learn foreign exchange control and balance of payments. • To study foreign exchange market	• Familiarizing the theories of international trade. • Describing the terms of trade and tariffs. Illustrating the foreign exchange control and the balance of payments • Analysing the foreign exchange market and foreign capital	Global

			and foreign capital. • To know international financial institutions to promote international trade.	• Appraising the international financial institutions.	
11	ELECTIVE:2 BASIC ECONOMETRICS	E547B	• To study basic econometrics. • To understand the application of regression analysis. • To know the problems in regression analysis. • To learn simultaneous equation methods. • To analyze various econometric methods with economic theories.	• Gaining knowledge about the basic econometrics. • Enabling with regression analysis. • Rectifying the different problems in regression analysis. • Applying the simultaneous equation methods. • Appraising economic theories with econometric models.	Global
12	ENVIRONMENTAL ECONOMICS	E643	• To understand the environmental concepts. • To explore the fundamental theories of environmental economics. • To learn various economic valuation technique • To study the implication of Economic growth on environmental resources • To understand the recent environmental policies in India.	• Familiarizing the environmental concepts in day-to-day life. • Describing the market failure with environmental resources. • Illustrating different methods in economic valuation techniques. • Analysing economic growth with environmental resources • Supporting environmental policies for better quality of life.	Global

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Name of the Programme: MA Economics

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ADVANCED MICRO ECONOMIC THEORY – I	E748	• To learn understand micro economic theories and models. • To study traditional demand theories and its functions. • To understand modern demand theories and its functions. • To demonstrate costs and production functions. • To evaluate and use the various game theory model.	• Understanding economics models and methodologies. • Applying traditional demand theories in business. • Analyzing modern demand theories in business. • Evaluating cost and Production functions. • Constructing game theory models in business.	Global
2	ADVANCED MACRO ECONOMIC THEORY – I	E749	• To learn understand the importance of macro economics. • To study the National Income and circular flow of Income. • To understand classical and Keynesian theory of employment and output. • To demonstrate Consumption and Investment functions.	• Understanding the importance and principles of macroeconomics. • Comparing national income measurement and circular flow of income. • Analysing the classical and Keynesian theory of employment and output. • Assessing the consumption and investment patterns.	Global

			• To evaluate ISLM functions.	• Evaluating the effectiveness of ISLMfunctions.	
3	ELECTIVE I: HISTORY OF ECONOMIC THOUGHT	E752B	• To learn understand the context of socialistic ideas. • To study the ideas of differentmarginalist schools. To understand the economic ideas of Neo-Classical school. • To demonstrate the different economic ideas of pre-independence of India. • To evaluate major economists in the post-independence of India to build modern economic ideas.	• Practicing socialistic ideas of St. Simon, Sismondi, Robert Owen and Karl Marxin economic world today. • Comparing and contrasting different contributions of marginalists school. • Analyzing the current macroeconomic debate between Neo-classical and the Keynesian school. • Interpreting and analyzing the early and modern economic ideas of Kautilya, Thiruvalluvar, Naoraji, Ranade and Gandhi. • Critically analyzing the applicability of early approaches to planning in relationto the economic world today.	Global
4	ADVANCED MICRO ECONOMIC THEORY-II	E855	• To learn relevant perfect market structure. • To study the nature of imperfect market structure. • To understand factor pricing under perfect market structure. • To demonstrate factor pricing underimperfectmarket structure. 5. To evaluate knowledge on generalequilibrium and welfare economics.	• Understanding the relevance of perfectmarket structure. • Comparing the nature of imperfect market structure. • Analysing the factor pricing in perfectcompetitive market. • Examining the trade union and rent theories • Evaluating the general equilibriumtheory and welfare economics.	Global

5	ADVANCED MACRO ECONOMIC THEORY – II	E856	• To learn economic fluctuations and its related theories. To study about policy measures tocontrol trade cycle. To understand macroeconomic policies in present scenario. To demonstrate in decision making to achieve desired economic goals. To evaluate understandmacroeconomic policies.	• Understanding about economicfluctuations. • Applying policy measures to control trade cycle. • Expertzing in principles ofmacroeconomics. • Evaluating modern macroeconomictheories and policies. • Creating macroeconomic variables at national and global level.	Global
6	INTERNATIONAL TRADE	E940	• To understand the traditional and modern theories of international trade. • To get thorough knowledge on various instruments of trade policies. • To know more about the operation of different trading agreements among the member countries. • To understand the overview of Indian EXIM and Foreign Trade Policies over the years. • To appraise on existing policy framework and promotional measures related to exports and exporters.	• Able to learn the traditional and moderntheories of international trade • Getting enough knowledge about different instruments used in international trade. • Becoming more familiar with operation of various trading agreements that took place across the world over the years. • Examining the features of EXIM and • Foreign Trade Policies over the time period. • Analyzing the existing policyframework and better understanding of various export promotion measures.	Global
7	RESEARCH METHODOLOGY	E943	• To understand basic concepts of research Methodology. • To select suitable research andsampling design. • To organize and conduct research in amore appropriate manner.	• Demonstrating the knowledge of research processes. • Developing research design in using specific research. • Compare quantitative and qualitative research paradigms in describing sampling methods, measurement scalesand instruments, and appropriate	Global

			Course Outcomes	Learning Outcomes	
			• To enhance the applicationknowledge to test the hypothesis. • To improve the skill of writing research report and thesis.	uses ofeach scales. • Describe, descriptive inferential statistics and provide application knowledge • Expertise in drafting the research report and thesis. For the specific career aspiration in higher education.	
8	ECONOMETRICS METHODS	E944A	• To understand the nature and scope ofeconometrics and the underlying problems related to econometric analysis. • To learn the application of regression analysis and usage of dummyvariables. • To analyze the application of economic variables in different econometric models. • To apply different econometric models in the application of time series data. • To acquire knowledge on application of volatility and stochastic models.	• Able to understand the basic of econometrics and problems associated while analyzing the data. • Analyzing the data using simple and multiple regression and inclusion of dummy variables. • Applying various econometric models into economic theory and practice. • Get thorough knowledge in analyzing time series, panel, and cross section data. • Having better understanding of different econometric methods in the application of volatility and error correction models.	Global
9	ENVIRONMENTAL ECONOMICS	E1040	• To provide a comprehensive introduction to the economic analysis of issues arising from the interactions between the natural environment and the human economy. • It focuses on the ecosystem-services and the challenges arising due to pollution.	• Equipped the ability to explain core economic terms, concepts, and theories. Addressing the environmental issues in relation to the theory of externalities, public goods, and welfare. • Demonstrating the economic principles concerning the choice of	Global

			To highlight the nature of market failure in resources allocation along with issues of social welfare. To introduce various methods and techniques of valuation of non-tradable environmental goods and services on the one hand and economics of pollution control on other side. To introduces developmental issues relating to trans-boundary and global pollution (climate change) and policies for their mitigation and control.	instruments for controlling pollution by using theories. Using or Appling different methods for valuing environmental goods and services. Taking up contemporary environmental discourse from an economists' point of view.	

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Programe Name : B.COM CA

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTERNET CONCEPTS AND WEB DESIGN	CC208	• To know the concept of basics of Internet. • To become knowledgeable in Fundamentals of Html • To ensure that the students have a basic understanding of creating Forms and Frames. • To understand the concept of Cascading Style Sheet. . • To be aware of the method of Java Script.	• Understand the basics of data communication, networking, internet and their importance, and recognize the different internet devices and their functions • Create a basic HTML document using the core HTML elements. To learn about the basic structure of an HTML element (content, attributes, etc.) and how they are used in the context of HTML web pages. • Design Web Page Elements using Forms, Frames, and Table Tag. • Illustrate how to use CSS to design the HTML web page. Introduced to the basic CSS concepts (declaration, rule set, rule, selector, etc.) and implement basic designs using CSS. • Develop a basic programming skill	International Needs

				using JavaScript, and implement simple JavaScript applications through hands-on exercises. • Analyze Program Flow using JavaScript (JS), and Adding External Libraries to Enhance HTML Applications.	
2	RELATIONAL DATABASE MANAGEMENT SYSTEM	CC414	• To understand the basic concepts of Database Data Models. • To learn how to implement the query language database. • To understand the advance features query language used to design an efficient database • To know database design models exist. • To understand the consequences of bad database design and how it can be overcome.	• Discuss database concepts, applications, data models • Identify the tablesand relationships between tables. • Apply normalization concepts to design the database. • Implement data definition, constraints, schema to organize data in database • Integrate the concepts of queries, joins, aggregate functions in SQL. • Develop the strong ability to use the database concepts for create queries and operations.	Internationa l Needs
3	WEB PROGRAMMING USING PHP	CC516	• To understand the basic fundamental syntax functions. • To understand form processing and validation methods. • To know file handling concepts. • To understand basic MySQL functions. • To implement PHP using XML functions.	• Explain about the web servers, installing web servers, basic syntax, built-in functions available in PHP to create server side scripts • Understand and implement validation of forms, processing and handling form values using PHP scripts • Create and use Cookies, Session, sending mails and handling the errors and exceptions using PHP built-in functions. • Understand and implement the file processing techniques, uploading files using PHP Scripts	Internationa l Needs

				• Create and maintain database using MySQL queries. • Create and maintain MySQL database from PHP	

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Name of the Programme: M Com

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ADVANCED BUSINESS STATISTICS	C725	• To Make the students to understand the correlation between variables. • To Acquire knowledge in theory of probability • To Educate the students to learn procedure for selecting sample and to importing knowledge on the testing of hypothesis. • To test the goodness of fit and testing homogeneity of variables. • To Enhance practical applications of testing equality of population variances	• Understand the basic concepts in Research in Social Sciences and business enquiry. • Retrieving the theory of probability in Binominal and Poison Distribution. • Analyze and develop the skills for scientific collection of data and determining the sample size for research. • It creates awareness among students with regard to the various statistical tools and test of significance that are applied in social and business research • Experimenting the one way and two way Analysis of Variance (ANOVA) for the applications of testing equality of population variance	Global

2	RESEARCH METHODOLOGY	C825	• To develop an idea about various research designs and techniques • To understand sampling techniques of research and its applications • To emphasis the learners in the usage of appropriate tools of data collection in research • To make the learners to understand the applications of SPSS • To lay foundation to become familiar in style of preparing research report	• Explain the basic concepts in Research in Social Sciences and business enquiry • Develop the skills for scientific collection of data and determining the sample size for research. • Able to understand the application of appropriate tool for data collection and to test the validity and reliability of research tools • Creates awareness among students with regard to the various statistical tools and test of significance that are applied in social and business research • Write a research report and dissertation	Global developmental needs
3	COMMERCE AND COMPUTERISED ACCOUNTING	C827C	• To establish the knowledge on E-Commerce and E-Business along with its process, potentials, driving forces and regulatory aspects. • To exhibit specialised knowledge on Electronic Data Interchange and Internet Trading Relationships for the betterment of Supply Chain Management. • To develop expertise in the field special features required for the Electronic Payment System and different forms of e-payment. • To make the students to appreciate the differences between Manual Accounting vs. Computerised Accounting.	• Enhance their knowledge on E-Commerce along with its re-engineering process, potential benefits, driving forces and regulatory aspects. • Improve the knowledge on the benefits and drawbacks of Electronic Data Interchange (EDI) system and Internet Trading Relationship business. • Understand the mechanism followed in the Electronic Payment System and also they will learn E-cash, E-Cheque and currency servers. • Acquaint their knowledge on the computerised accounting through the process of creating company, grouping of accounts, creation of ledger, etc. • Develop their knowledge on the	Global developmental needs

			• To enable the students to prepare the statements of accounting and cash flow statements in the computerised format.	preparation of computerised statements like Day Book, Trial Balance, Cash Flow statements, etc.	
4	STUDY PAPER I SERVICES MARKETING	C829SP1	• To understand the conceptual framework of service marketing. • To examine the concept of physical evidence and capacity planning. • To analyse and identify the various factors affecting the pricing decision. • To reflect and enumerate the dimensions of quality • To enhance the marketing skills of students on various services.	• Understand the basics of service marketing and service marketing mix • Comprehend the guidelines for physical evidence and manage the capacity and match demand • Apply the pricing strategy and determine the appropriate price for the service • Evaluate the dinmensions of quality and causes of Gaps. • Integrate the service marketing skills on various service sectors.	National and global developmental needs
5	LOGISTICS AND SUPPLY CHAIN MANAGEMENT	C930A	• To enable the students to understand the importance and aims of logistics and its current trends. • To make aware of the various stages of planning and strategies involved in the logistics process. • To evaluate the methods of measuring various activities of logistics adopted in the organisations. • To appreciate the concepts of supply chain management and application of IT on the same. • To analyse the techniques involved in e-financial supply chain management in the bank's perspective.	• Understand the importance and aims of logistics in current trends • Bring out the stages of planning and strategies of various activities in logistics. • Evaluate the various activities of logistics adopted in the organisations. • Analysing various modern financial supply chain management. • Applying the concepts of supply chain management with help if IT in supply chain management	Global developmental needs

6	LEGAL ASPECTS OF BUSINESS	C1023	• To help the students to get acquainted with IT, Intellectual Property Rights, Patent Act and Copyrights Act. • To help to understand FEMA Act and various provisions of the Act. • To analise various problems of environment and taking prevention and controlling measures of environment • To Illustrate various rights and provision of Consumer Protection Act • To determine various provisions of Competition Act	• Understanding the IT act, Intellectual Property Rights, Patent Act, Copyrights Act. • Inculcating various provisions of FEMA act. • Analising various problems of environment and taking prevention and controlling measures of environment. • Applying any one rights of Consumer Protection Act. • Evaluating the competitions between the companies by examples.	Global
7	INTERNATIONAL BUSINESS	C1025	• To demonstrate the classifications of international business and the important factors influencing the international business. • To exhibit the specialised knowledge on the export and import documentation methods and procedures along with the policies of India. • To develop expertise in the field of international trading organisations (like IMF, WTO, UNCTAD, etc) and its roles and functions on international trade. • To prepare themselves in understanding the concept, strategies and technologies of Multi-National	• Enhance their knowledge on the classifications and the most important factors influencing the international business. • Construct the ideas relevant to export and import documentation methods and procedures along with the policies of India. • Enumerate the different international trading organisations (like IMF, WTO, UNCTAD, etc) and its roles and functions on international trade. • Understand the concept, strategies and the technologies of Multi-National Companies and its management in international marketing. • Inculcate the knowledge on the	Global

			Companies and its management in international marketing. • To inculcate the knowledge on the association between foreign collaborations (including joint ventures) and international trade.	association between foreign collaborations (including joint ventures) and international trade.	
8	INTERNATIONAL MARKETING	C1026A	• To study and gain the knowledge on international marketing • To make the students to understand the international marketing environment • To develop International marketing strategies • To evaluate the various international marketing channels and physical distribution management • To acquire knowledge on branding, pricing policies and their promotion in the international markets.	• Enhance their knowledge on International marketing concepts • Evaluate International marketing environment on the basis of policies, legal, technology, business factors • Create International marketing strategies for exporting product • Appraise International marketing channels strategies and physical distribution management • Assess International pricing and promotional policy assistance and incentives	Global developmental needs

| 9 | EXPORT AND IMPORT MANAGEMENT | C1028SP3 | • To understand the basic concepts of international trade environment.
• To acquire knowledge on export - import procedures and transactions.
• To Learn the Day-to-Day Accounting for exports and imports
• To understand the needs EXIM policy and EXIM Bank.
• To import knowledge on Special Economic Zone. | • Acquire the knowledge international trade environment and GATT agreement
• Analyse export - import procedures and transactions.
• Evaluate day to day Accounting for exports and imports for income tax applicability on exporting firms / companies.
• Understand the needs EXIM policy and EXIM Bank.
• Develop the knowledge on Export oriented Units and Special Economic Zones | Global developmental needs |

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Name of the Programme: BSc. Mathematics

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	DIFFERENTIAL CALCULUS	M116	• To develop problem solving skills in Calculus and provide base for higher mathematics	• Classify the maxima and minima of the function. • Demonstrate mean value theorem for differentiable functions. • Developing the Euler's theorem of homogeneous function. • Finding the curvature and analyze evolutes of the curve in Cartesian and Polar coordinates. • Identify and build the Envelopes and Asymptotes of the curve.	Global
2	ALGEBRA AND TRIGONOMETRY	M117	• To solve various types of algebraic equations, derive trigonometric identities and find real imaginary parts of complex trigonometric expression.	• list summation of various series. understand the importance of real and complex roots of the equation. • finding the roots of the equation by various methods. • formulate the Trigonometric series. determine and point out the relation between circular and hyperbolic function.	Global

3	INTEGRAL CALCULUS	M214	• To develop problem solving skills in Calculus and provide base for higher mathematics.	• identify the techniques to solve the integration of Rational function. • understand the techniques to solve the integration of Trigonometry function. applying the Bernoulli's formula to get the solution of the integral of the function. • evaluate and deduce the concept of double and triple integrals. • integrate of double and triple integral by Beta and Gamma function.	Global
4	DIFFERENTIAL EQUATIONS & FOURIER SERIES	M215	• To help the learners to solve standard types of ordinary and partial differential equations	• understand the genesis of ordinary as well as partial differential equations and name the applications in real world. • apply various techniques of getting exact solutions of certain solvable first order differential equations and linear differential equations of second order. • find solution of first order linear partial differential equations using Lagrange's method and eliminating constant and functions.. • solve second order linear partial differential equations with constant coefficients. • formulate mathematical models in the form of ordinary differential equations and to get the solution of the problem. Fourier Cosine and Fourier Sine series.	Global
5	VECTOR CALCULUS	M315	• To develop deep understanding of key concepts followed by problems of applied mathematics, which are essential tools of modern applied mathematics	• understand the definition of Scalar and Vector point's functions and find the directional derivative of a Scalar point function. • find the solenoidal and irrotational of the vector point function. evaluate the line integrals, surface integrals and volume integrals.	Global

				• describe inter-relationship among the line integral, surface integral and triple integral formulation. • apply and analyze Greens', Gauss and Stokes theorem.	
6	SOLID GEOMETRY AND TRANSFORMS	M316	• To make the students understand the basic concepts in two dimensional, three dimensional geometry, Laplace and Fourier transforms and to make them solve problems in these fields of study	• relate between plane and straight line in 2D and 3D. • examine the two-dimensional, three-dimensional geometry and solve problems in these areas analyze the uses of solid geometry in different scientific fields. • find the solution of ODE using Laplace transforms. • define the Fourier transform and its properties and convolution theorem and perform problems by Fourier transform.	Global
7	MATHEMATICAL LOGIC (CERTIFICATE COURSE)		• The students will acquire the knowledge of Logic and prepositional calculus; Basic logical operations, truth tables, Tautologies and contradictions; The applications of mathematical logic; Conditional and bi-conditional statements; Quantifiers and negations of quantified statements	• learn the syntax of mathematical logic and semantics of first-order languages. • understand the propositional logic and basic theorems like compactness theorem, meta theorem and post-tautology theorem. • assimilate the concept of completeness interpretations and their applications with special emphasis on applications in algebra.	Global
8	NUMERICAL METHODS	M415	• To introduce the scientific computation techniques to the students.	• find numerical solution to algebraic and transcendental equation. • devise numerical solutions of system of linear equations and to check the accuracy of the solution. • apply various interpolating and extrapolating methods to find numerical solution.	Global

				• understand the concept of numerical differentiation. • define integration formulas and analyze the integrals by using Trapezoidal and Simpson's formula.	
9	ALGEBRAIC STRUCTURES – I	M416	• To acquire the knowledge of basic concept of some of the fundamental algebraic structures on Groups and Subgroups, Permutation Groups, Normal Subgroups and Factor Groups and Group Homomorphism's	• understand the fundamental concept of groups, subgroups and related theorems. • define cyclic and permutation groups and its properties. • establish Lagrange's theorem. categorize internal and external direct products. • consider finite abelian group and develop their properties of homomorphism	Global
10	ALGEBRAIC STRUCTURES – II	M541	• To acquire the knowledge of basic concept of some of the fundamental algebraic structures on Rings and Integral Domains, Ideals, Factor Rings and Polynomials.	• analyze and demonstrate examples of ideals and factor rings. • define isomorphism and homomorphism for groups and rings. • categorize various canonical types of groups and rings. • apply and perform the reducibility and irreducibility tests for factorization of polynomials. • prove the divisibility of integral domain	Global
11	REAL ANALYSIS – I	M542	• To study the real number system, point set topology, limits and continuity, derivatives of real-valued functions.	• understand and validate the basic properties of real number system such as least upper bound properties and Archimedean properties. • identify the continuity of a function. define and focus on open set, closed set, connected sets, continuous set adherent points and accumulation points. • establish famous theorems such as Bolzano's theorem and Fixed point	Global

				theorem.	
				• evaluate derivatives of real valued function using Rolle's theorem, Mean value theorem and Taylor's formula.	
12	MECHANICS	M543	• To introduce the study of the motion of particles or bodies under the influence of forces and to provide a basic knowledge of behavior of objects in motion	• bringout the fundamental concepts of Kinematics. • understand Forces on a rigid body. solving the problems involving frictional forces and outline their applications. • prove rectilinear motion under varying forces. • hypothesize projectile and impact.	Global
13	PROBABILITY AND STATISTICS	M544	• To develop the statistical concepts and introduce the techniques of analysis and inference used for research in social and life sciences	• understand the basic concepts of probability and various probabilities. • classify and perform discrete and continuous random variable and their probability distribution. • define expectation and moment generating function and focus their properties. • establish discrete and continuous distributions such as Binomial, Poisson, normal, uniform and gamma distribution. • find the correlation coefficient, rank correlation and fitting of regression lines by least square method.	Global
14	NUMBER THEORY (ELECTIVE)	M545A	• To study the divisibility, primes, congruence's and arithmetic functions in number theory.	• describe the basic concepts of divisibility • perform equivalence relation establish Fermat's theorem Analyze and evaluate congruence relations • define arithmetic functions and illustrate applications	Global

15	MATHEMATICAL MODELING WITH DIFFERENCE AND DIFFERENTIAL EQUATIONS (ELECTIVE)	M545B	• To discuss the mathematical modeling through difference equations, differential equations, calculus of variations and dynamical programming.	• create mathematical models of empirical or theoretical phenomena in domains such as the physical, natural or social science. • understand the analytical approach to problems in their future endeavours. assess and articulate what type of modeling techniques are appropriate for a given physical system. • make predictions of the behavior of a given physical system based on the analysis of its mathematical model. • recognise the power of mathematical modeling and analysis and be able to apply their understanding to their further studies.	Global
16	FUZZY ALGEBRA (ELECTIVE)	M545C	• This course aims to introduce fuzzy algebra, fuzzy graphs, fuzzy relations, fuzzy logic, fuzzy composition and initiate the learners into the application of these ideas	• describe the fuzzy set operations analyze and justify the fuzzy relations. • illustrate their knowledge on algebra and their extensions and applications formulate fuzzy graphs from fuzzy relations and would relate to ordinary graphs. • establish fuzzy algebraic theorems over fuzzy field.	Global
17	MATHEMATICAL MODELING WITH SPREADSHEET		• To analyze the long term behavior of discrete and continuous dynamical systems numerically and graphically using Spreadsheet.	• enhance the links between mathematics, technology and other sciences in order to enhance the power of mathematics for the simulation of physical phenomena with the help of mathematical modeling techniques with spread sheet.	Global

18	LINEAR ALGEBRA	M643	• To study the transformations, Matrices, Systems of Linear Equations, Determinants and Diagonalization in Vector Space	• understand the concept of vector spaces and its bases. • analyze the matrix representation of the linear transformation. • find the rank of the matrix establish Cayley Hamilton theorem define the orthonormal basis and develop Gram-Schmidt orthogonalization process.	Global
19	REAL ANALYSIS II	M644	• To study on infinite series, test of convergence, rearrangement of Series, sequence of functions, uniform convergence and power series	• understand properties of the real line and that of sequence and infinite series. • apply the ratio, root, alternating series and various tests to determine convergence and absolute convergence of an infinite series of real numbers. • define the properties of rearrangement of series, and its infinite products. • find the uniform convergence of a sequence of functions. • outline the concept of power series and formulate related results.	Global
20	COMPLEX ANALYSIS	M645	• Upon completing this course the students will be able to use C-R equations to test for analyticity and compute a derivative, work with standard complex functions (mapping properties, derivatives), compute contour integrals using definition and Cauchy integral theorems, compute Taylor and Laurent series expansions of functions and apply the Residue theorem in the evaluation of integrals	• understand the significance of differentiability and analyzing of complex function leading to the Cauchy-Riemann equations. • define the concept of conformal mapping and cross ratio and fixed points of bilinear transformation. • learn the role of Cauchy theorem and Cauchy integral form in evaluation of contour integrals, apply Liouville's theorem in fundamental theorem of algebra . • express the Taylor and Laurent series expansion of analytic function.	Global

				• categorize the nature of singularities, poles and residues and perform the application of Cauchy residue theorem.	
21	RESOURCE MANAGEMENT TECHNIQUES (ELECTIVE)	M646A	• To develop the skill of formulation of LPP and different techniques to solve it. To know the applications of Transportation and Assignment problems. To study the optimizing problems in Sequencing, Networking and Inventory control.	• describe the concepts involved in solving linear programming problems which are widely used in business operations. • apply mathematical techniques used in optimizing transportation and assignment problems. • solve job sequencing problems. breakdown different inventory models evaluate PERT, CPM problems and develop applications	Global
22	GRAPH THEORY (ELECTIVE)	M646B	• To study the basic concepts of Graph Theory such as Trees, planarity, Coloring, directed graphs and know the applications to Travelling Salesman Problem, teleprinter's problem, maximum network flow and arborescence	• define the graphs along with types and their examples . • understand the types of tree. establish the coloring theorems for graphs and make graph matching. • classify and analyze types of digraphs. assess the real world problems using graphs.	Global
23	DISCRETE MATHEMATICS (ELECTIVE)	M646C	• Prepare students to develop mathematical foundations to understand , create mathematical arguments and focuses on the Formal languages , Automata, Lattices, Boolean Algebra and Graph Theory	• analyze and perceive various graph theoretic concepts and familiarize with their applications. • describe about partially ordered sets, Boolean algebra, lattices and their types. apply Karnaugh map for simplifying the Boolean expression demonstrate the skill to construct simple mathematical proofs and to validate . • achieve greater accuracy , clarity of thought and language.	Global

| 24 | MATHEMATICAL STATISTICS | M647 | • To apply statistical techniques for interpreting and drawing conclusion for business problem | • calculate the partial and multiple correlation coefficients for three variables. time series data, its applications to various field and components of time series, fitting of trend by moving average method, Measurement of seasonal indices by ratio and trend, ratio to moving average methods.
• define random sample from a distribution, sampling distribution.. understand one way and two way analysis of variance. testing of goodness of fit and evaluate the test of independence. | Global |

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Name of the Programme: MSc. Mathematics

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ABSTRACT ALGEBRA	M745	• To study the transformations, Extension Fields and algebraic extensions, Finite Fields and Sylow's theorems, Finite Simple groups, Symmetry groups and Cayley digraphs of groups and Galois Theory in Vector Space	• prove theorems applying algebraic ways of thinking. • connect groups with graphs and understanding about Hamiltonian graphs. • compose clear and accurate proofs using the concepts of Galois Theory. • bringout insight into Abstract Algebra with focus on axiomatic theories. • demonstrate knowledge and understanding of fundamental concepts including extension fields, Algebraic extension, Finite fields, Class equations and Sylow's theorem.	Global
2	REAL ANALYSIS	M746	• To study the real number system, Functions of Bounded Variation and Rectifiable, Riemann–Stieltjes integral, Lebesgue Integral and Square Space	• analyze and evaluate functions of bounded variation and Rectifiable Curves. • describe the concept of Riemann–Stieltjes integral and its properties. • demonstrate the concept of step function, upper function, Lebesgue function and their integrals.	Global

				• construct various mathematical proofs using the properties of Lebesgue integrals and establish the Levi monotone convergence theorem. • formulate the concept and properties of inner products, norms and measurable functions.	
3	ORDINARY DIFFERENTIAL EQUATIONS	M747	• To study the Differential equation of higher order, to find the power series solution of special type of Differential equations, to solve the system of linear Differential equations, to study existence and uniqueness of the solutions, boundary value problems.	• establish the qualitative behavior of solutions of systems of differential equations. • recognize the physical phenomena modeled by differential equations and dynamical systems. • analyze solutions using appropriate methods and give examples. • formulate Green's function for boundary value problems. • Understand and use various theoretical ideas and results that underlie the mathematics in this course.	Global
4	MATHEMATICAL STATISTICS	M748	• To study and apply sampling theory, significance tests, estimation, testing of hypothesis and design of experiments	• understand Sampling and Sampling distributions. • illustrate the methods of finding Estimators • determine Parametric point and Interval Estimation. • perform hypothesis testing , justify hypothesis testing to Sampling problems and to determine confidence Intervals. • define the basic terms used in design of experiments and use appropriate experimental designs to analyze the experimental data.	Global

5	DIFFERENTIAL GEOMETRY	M749A	• This course introduces space curves and their intrinsic properties of a surface and geodesics. Further the non – intrinsic properties of surfaces are explored	• explain space curves, Curves between surfaces, metrics on a surface, fundamental form of a surface and Geodesics. • evaluate these concepts with related examples. • compose problems on geodesics • recognize applicability of developables • construct and analyze the problems on curvature and minimal surfaces	Global
6	SKILL ENHANCEMENT COURSE I – ALGEBRA	M749B	• To develop broad and balanced knowledge and understanding of definitions, concepts, theorems and principles. • To enhance the ability of learners to apply the knowledge and skills acquired by them during the programme to solve specific theoretical and applied problem in Mathematics. • To empower students to crack competitive examinations such as NET, SET and TRB and to complement the theoretical content of the subject with exercise problems.	• disseminate new and innovative knowledge that will make them fit for any competitions in job opportunities. • apply new tangents or to exercise their knowledge and skill in other disciplines. • develop, prioritize, demonstrate display, and disseminate newer versions and to interpret in novel ways. • bringout the flair for new and continuous learning process. • build the dexterity.	Global
7	CODING THEORY	M749C	• To provide students with elementary knowledge of theory of error correcting codes and readable introduction to mathematical aspect of coding	• describe and justify the concept of linear codes and error correcting codes. • perform encoding and decoding using linear codes. • construct and decode BCH code. • summarize different types of codes. • solve linear coding theory problems	Global

8	ADVANCED LINEAR ALGEBRA	M848	• To give the students a thorough knowledge of the various aspects of Linear Algebra. • To train the students in problem-solving as a preparatory for competitive exam	• understand linear transformations and represent in matrix form. • compute minimal polynomial and characteristic polynomial of linear transformation. • find applicability of the inner product spaces. • outline and formulate the theory of the course to solve variety of problems at an appropriate level of difficulty • examine bi-linear and Jordan canonical forms.	Global
9	PARTIAL DIFFERENTIAL EQUATIONS	M849	• To develop skills in solving partial differential equations.	• recognize the major classification of PDEs and the qualitative differences between the classes of equations. • demonstrate modeling assumptions and derivations that lead to PDEs. • becrtically competent in solving linear PDEs using classical solution methods. • Use knowledge of partial differential equations for modelling the general structure of solutions and using analytic methods for solutions. • investigate and solve boundary values problems and point out its significance	Global
10	ADVANCED GRAPH THEORY	M850	• To understand the concept of graphs, sub graphs, trees, connectivity, Euler tour, Hamilton cycle, matching, colouring of graphs, independent set, cliques, vertex colouring and planar graphs.	• understand basic concepts in Graph theory • apply the understanding and use it to model real life situations. • apply the concepts of connectivity, Euler and Hamilton cycles in the real life situations. • identify and develop the applications of planarity and colourability. • create graph models in network and computing	Global

11	CLASSICAL DYNAMICS	M851	• To study mechanical systems under generalized coordinate, virtual work, energy and momentum, also to study the mechanics developed by Newton, Lagrange, Hamilton and Jacobi.	• demonstrate the knowledge of core principles in mechanics • interpret and consider complex problems of classical dynamics in a systematic way • apply the variation principle for real physical situations • explore different applications of these concepts in the mechanical and electromagnetic fields. • describe and apply the concept of Angular momentum, Kinetic energy and Moment of inertia of a particle.	Global
12	MATHEMATICAL MODELS IN BIOLOGY	M852A	• This Course aims to explore the potential of Mathematical Modeling among the Students and in emphasizing the role of Mathematical Models in Biology and Medicine.	• describe standard modeling procedures, which involve observations of a natural system, the development of a numeric and or/analytical model. • analyze the model through analytical and graphical solutions and/or statistical analysis. • distinguish between two species and multi species models. • formulate stochastic and deterministic models. • construct and evaluate concrete examples in pharmacokinetics	Global
13	SKILL ENHANCEMENT COURSE II – LINEAR ALGEBRA	M852B	• To develop broad and balanced knowledge and understanding of definitions, concepts, theorems and principles. • To enhance the ability of learners to apply the knowledge and skills acquired by them during the programme to solve specific theoretical and applied problem in Mathematics.	• disseminate new and innovative knowledge that will make them fit for any competitions in job opportunities. • analyze new tangents or to exercise their knowledge and skill in their own disciplines. • develop, give examples, demonstrate display, and disseminate newer versions and to interpret in novel ways.	Global

			• Toempower students to crack competitive examinations such as NET, SET and TRB and to complement the theoretical content of the subject with exercise problems •	• bringout the flair for new and continuous learning process. • build the dexterity.	
14	NUMERICAL ANALYSIS	M852C	• To provide the student an understanding of the basic principles of numerical methods and to apply them in solving algebraic equations and ordinary differential equations numerically; • To introduce various difference operators to enable the students to apply them in interpolation and numerical differentiation and integration.	• Understand the need for numerical methods in real life situations. • Apply the methods to solve problems and find the size errors in each method. • criticallyanalyse the accuracy of each method in solving algebraic, transcendental system of equations. • identify and implement numerical methods in various physical problems and find its efficacy in real life. • develop and demonstrate the theoretical and practical aspects of numerical methods.	Global
15	CERTIFICATE COURSE - R LANGUAGE FOR STATISTICS	M847X	• To introduce to the students the novel applications of R language and to give them a hands on experience of working with data	• explain practical implications of expectation and variance and how they predict the shapes of distribution and density (mass) functions of a random variable • demonstrate capability to write programming codes for plotting different distributions. • evaluate the independence of attributes and design of experiments. • describe and apply probability distribution function and different types of distributive functions through R Language. • know and understand about Tests of Hypothesis through R.	Global

			Objectives	Outcomes	
16	SELF-STUDY PAPER – FORMAL LANGUAGES AND AUTOMATA	M845X	• To obtain knowledge about finite automata, regular expressions and regular grammars, properties of context free languages	• understand basic concepts in Lattices , formal language and automata theory • demonstrate abstract models of computing, including • deterministic (DFA), non-deterministic (NFA), Push Down Automata(PDA) • relate practical problems to languages and automata • design grammars and recognizers for different formal languages • Identify and formalate the structure of a given formal language using regular expressions and context - free grammars	Global
17	ADVANCED BUSINESS STATISTICS FOR MANAGEMENT		• To impart the knowledge to analyze the data using statistical techniques, such as hypothesis testing and regression estimation	• describe the concept of a random variable and its probability distributions. • compute and interpret the correlation and regression analysis. • analyze probability distribution (discrete and continuous) to a variety of problems in various diversified fields. • draft various methods for testing of hypothesis. • develop strategies using mathematical methods to solve real world problems	Global
18	ADVANCED BUSINESS STATISTICS (FOR M.COM)	MBA134T	• To apply statistical techniques for interpreting and drawing conclusion for business problems.	This course will enable the students to: • understand the concept of a random variable and its probability distributions. • compute and interpret partial and multiple correlation. • apply probability distribution (discrete and continuous) to a variety ofproblems in various diversified fields. • discuss the different methodsof testing of hypothesis	Global

19	MATHEMATICAL FOUNDATIONS (FOR M.SC. COMPUTER SCIENCE)	MCS150T	• To impart the knowledge of the concepts needed to test the logic of program, understanding in Identifying structures, properties of languages and Optimization method.	This course will enable the students to: • understand the concept of testing the mathematical logic. • construct FA, DFA and NFA. • have an in-depth study of Transportation and Assignment problems. • understand PERT-CPM technique for project management and to construct network diagram. Time schedule Resource levelling with probability and cost consideration. • discuss the various methods for testing of hypothesis. • explore the knowledge of graph theoretical concepts.	Global
20	QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS (FOR M.COM		• To apply OR techniques for interpreting and drawing conclusion for business problems.	This course will enable the students to: • develop and solve LPP models using graphical and simplex method. • have an in-depth study of Transportation and Assignment problems. • understand the meaning of inventory control as well as various forms and functional role of inventory. • understand and use PERT-CPM technique for project management and to construct network diagram. Time schedule Resource levelling with probability and cost consideration	Global
21	OPTIMIZATION TECHNIQUES (FOR MCA)	MCA240T	• To obtain knowledge on linear programming problems, transportation problems, assignment problems, inventory models, queuing models, project management and Game theory problems	• develop LPP models and find solutions using graphical and simplex method. • understand the meaning of inventory control as well as various forms and functional role of inventory. • identify and examine situations that generate queueing problems and to analyze	Global

				• a variety of performance measure of a queueing systems. • employ and evaluate PERT-CPM technique for project management and to construct network diagram. Time schedule Resource levelling with probability and cost consideration. • outline the principles of two person zero sum games and to apply graphical method and use linear programming approach to compute the value of the game.	
22	APPLIED OPERATIONS RESEARCH FOR MANAGEMENT (FOR MBA	MBA235T	• To impart the knowledge of quantitative methods used in linear programming problems, transportation problems, assignment problems, project management, game theory problems, replacement and maintenance	• develop LPP models and find solutions using graphical and simplex method. • understand the meaning of inventory control as well as various forms and functional role of inventory. • identify problems on Transportation and Assignment problems.. • employ and evaluate PERT-CPM technique for project management and to construct network diagram. Time schedule Resource levelling with probability and cost consideration. • outline the meaning of decision theory and the principles of two person zero sum games and to apply graphical method and use linear programming approach to compute the value of the game.	Global
23	MATHEMATICAL FOUNDATIONS (TO M.SC. SOFTWARE TECHNOLOGY)	MCS150T	• To impart the knowledge of the concepts needed to test the logic of program, understanding in Identifying structures, properties of languages and Optimization method.	This course will enable the students to: • understand the concept of logic and prepositional calculus and study basic logical operations. • construct FA, DFA and NFA. • have an in-depth study of Transportation and Assignment problems.	Global

				• understand PERT-CPM technique for project management and to construct network diagram. Time schedule Resource levelling with probability and cost consideration. • discuss the various methods for testing of hypothesis. • explore the knowledge of graph theoretical concepts.	
24	MATHEMATICAL ANALYSIS	M953	• To study and analyze the real number system, Fourier series , Fourier Integral, multivariable calculus , Cauchy Theorem and Residue Calculus	• understand and describe the basic concepts of Fourier series and Fourier integrals with respect to orthogonal system. • analyze the representation and convergence problems of Fourier series. • analyze and evaluate the differences between transforms of various functions • formulate and evaluate complex contour integrals directly and by the fundamental theorem. • apply the Cauchy integral theorem in its various versions to compute contour integration.	Global
25	TOPOLOGY	M954	• To develop student's topological and proof writing skills which are essential in the study of advanced mathematics, understand the concepts of topological spaces, analyze and synthesize proofs, understanding the concepts of connectedness and compactness	• define and illustrate the concept of topological spaces and the basic definitions of open sets, neighbourhood, interior, exterior, closure and their axioms for defining topological space. • Understand continuity, compactness, connectedness, homeomorphism and topological properties. • analyze and apply the topological concepts in Functional Analysis. • Ability to determine that a given point in a topological space is either a limit point or not for a given subset of a topological space.	Global

			• develop qualitative tools to characterize connectedness, compactness, second countable, Hausdorff and develop tools to identify when two are equivalent (homeomorphic).	
26	FLUID DYNAMICS	M956	• This course aims to provide basic knowledge in kinematics of fluids in motion, equations of motion of a fluid, three dimensional flows and viscous flows.	• Bring out the basic knowledge in Kinematics of fluids in motion. • understand the meaning of two dimensional and three dimensional flow and related problems. • analyze simple fluid flow problems (flow between parallel plates, flow through pipe etc.) with Navier-Stoke's equation of motion. • construct and evaluate problems based on two and three dimensional flow. • interpret the real life application of the concepts.	Global
27	NONLINEAR DYNAMICAL SYSTEMS	M957A	• To learn and apply phase plane analysis and stability techniques to problems in Science and technology.	• understand phase plane analysis and stability techniques to evaluate problems in Science and technology. • describe these concepts with examples. • propose and solve interesting examples of Dynamical Systems • establish stability results • point out the importance of modelling physical systems	Global
28	SKILL ENHANCEMENT COURSE III – REAL ANALYSIS	M957B	• Empowering students to crack competitive examinations such as NET, SET and TRB. To complement the theoretical content of the subject with exercise problems.	• apply the theoretical knowledge in solving problems. • attempt competitive examinations such as NET, SET and TRB. • Extend their knowledge of Lebesgue theory of integration by selecting and applying its tools for further research in this and other related areas	Global

				• Recognize the need of concept of measure from a practical view point. • Understand the nature of abstract mathematics and explore the concepts in further details.	
29	MATHEMATICAL PHYSICS	M957C	• This course intends to introduce applications of various mathematical techniques to problems of Theoretical Physics. Examples could be chosen from all 4 traditional divisions of Modern Fundamental Theoretical Physics – Classical Mechanics, Electrodynamics, Quantum Mechanics and Statistical Physics.	• describe and employ the concepts of Gradient, Divergence, Curl and their typical applications in Physics. • prioritize special functions like Gamma function, Beta function, Dirac function, Delta function, Bessel function and their relations. • Illustrate Lagrangian and Hamitonian approaches in classical mechanics. • adapt to tensors in physics. • evaluate special type of matrices that are relevant in Physics.	Global
30	CERTIFICATE PROGRAMME – LATEX FOR MATHEMATICS	M951X	• To train students in the preparation of projects and dissertations using LaTex	• define preamble for preparation of documents with paragraphs and sections • understand basic typesetting mathematical expressions and numbered equations • explain and demonstrate different packages and construct tables and insert figures in the document. • find and resolve errors that occurs. • compile the source file to get expected output form as required.	Global
31	CERTIFICATE COURSE – MATHEMATICS FOR COMPETITIVE	M952X	• To prepare the students for competitive examinations	• make critique of quantitative information using proportional reasoning • Interpret and compare weighted averages, indices, ranking. • identify uses and misuses of percentages related to a proper understanding of the bases.	Global

			Course Outcomes	Course Objectives	
	EXAMINATIONS – I (IDC)			• examining and estimating percentages as rates per 100 • solve for an unknown quantity in proportional situation	
32	COMPLEX FUNCTION THEORY	M1049	• To study the Maximum Principle, Schwarz Lemma, Evaluation of Certain Integrals, Analytic Continuation, Representation of Meromorphic and Entire Functions and Mapping Theorems.	• develop the maximum assistance in mastering the fundamental concepts and techniques of Complex Function Theory. • establish Maximum principle, Schwarz lemma and Liouville's theorem. • evaluate different Types of Integral. • examine interesting results concerning certain mapping problems between domains. • understand and analyze the concept of Analytic Continuation.	Global
33	FUNCTIONAL ANALYSIS	M1050	• To provide students with a strong foundation in functional analysis, focusing on spaces, operators and fundamental theorems. • To develop student's skills and confidence in mathematical analysis and proof techniques.	• understand the Banach spaces and Transformations on Banach Spaces. • prove Hahn Banach theorem and open mapping theorem. • describe operators and fundamental theorems. • validate orthogonal and orthonormal sets. • Analyze and establish the regular and singular elements.	Global
34	DIFFERENCE EQUATIONS	M1051	• To introduce the process of discretization, discrete version of Differential Equations, oscillation and the asymptotic behaviour of solutions of certain class of difference equations. Solving difference equations using z-transforms is stressed	• define the basic concepts of difference equations. • calculate solutions of linear difference equations. • solve difference equations using z-transforms. • explain the oscillatory behaviour of difference equations.	Global

				• analyze and evaluate the asymptotic behaviour of solutions of certain class of difference equations.	
35	STOCHASTIC PROCESSES	M1052A	• To introduce to the students the basic ideas of Stochastic processes, Markov chains, Markov process and Renewal process and to motivate research in these areas	• demonstrate the basic concepts of Stochastic process, Markov chains. • identify the type of the distribution • apply the concepts in practical problems • compose and evaluate simple Markovian Queueing models. • analyze and evaluate renewal equations	Global
36	SKILL ENHANCEMENT COURSE IV– COMPLEX ANALYSIS	M1052B	• Empowering students to crack competitive examinations such as NET, SET and TRB. To complement the theoretical content of the subject with exercise problems	• analyze and solve problems on Analytic functions, Power Series and Complex Integration. • Illustrate Conformal Mappings, Mobius Transformation and solve related problems. • identify Singularities and derive Laurent's series • formulate Residue Theorem in Contour Integration. • analyze and evaluate problems based on Rouche's Theorem	Global
37	THEORY OF TRANSFORMS	M1052C	• To impart the basic knowledge of principles of Fourier series and Z-Transforms; To give different techniques to solve integral problems using Transforms	• summarize knowledge of various mathematical concepts and techniques required for successful application of mathematics in physics and related sciences • examine application of Z-transform. • solve differential & integral equations with initial conditions using Laplace transform. • analyze and evaluate the Fourier transform of a continuous function and be familiar with its basic properties. • validate solution of integral equation and their application.	Global

38	CERTIFICATE COURSE – MATHEMATICS FOR COMPETITIVE EXAMINATIONS – II (IDC)	M1048X	• Quantitative Aptitude Tests evaluate numerical ability and problem solving skills of candidates. This test forms the major part of a number of important entrance exams for different fields. CAT, MAT, XAT, and GMAT and many other significant exams have Quantitative Aptitude as a major section. Many companies use it in their selection procedure. Topics that may be included in different exams are:	• make critique of quantitative information using proportional reasoning • interpret and compare the statements for verification of truth. • identify suitable methods for providing analytical reasoning. • examining and estimating simple and compound interest • solve problems and provide suitable graphical representation.	Global
39	STATISTICAL AND NUMERICAL METHODS (FOR MCA)		• This course aims at providing the necessary basic concepts of a few statistical and numerical methods and give procedures for solving numerically different kinds of problems occurring in engineering and technology	• analyze various methods for testing of hypothesis. • understand numerical methods for finding the solution of some problems upto a desired degree of accuracy. • identify the numerical problems to be more competitive in computation. • employ numerical methods for approximation. • evaluate and formulate solutions of equations and eigen value problems.	Global
40	QUANTITATIVE APTITUDE TECHNIQUES (FOR MCA)		• To obtain aptitude skills and to solve quantitative problems.	• make critique of quantitative information using proportional reasoning • interpret and compare weighted averages, indices, ranking. • define interests and calculate simple and compound interest. • examining and estimating percentages as rates per 100 • solve for an unknown quantity in proportional situation	Global

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Accredited by NAAC (4th Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Name of the Programme: B. Sc Physics

S. No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	SUBJECT ELECTIVE - I: RENEWABLE ENERGY AND ENERGY HARVESTING	P538C	• To make the students to understand the importance of fossil fuels, conventional energy resources. • To provide a complete idea of basic components of a typical solar collectors and its applications in the solar energy absorption equipment's. • To make the students to analyze the dissimilarity between Horizontal axis and vertical axis WECS. • To enable the students to comprehend the concept behind various energy sources including biomass, tidal energy and hydrogen energy. • To give a basic knowledge about various methods of energy harnessing, storage systems and distribution.	On successful completion of the course, the students will be able to • Explain the basic ideas on commercial and non-conventional energy resources and illustrate their availability. • Explain the construction and designing of solar collectors and its implementation in the solar energy equipments. • Demonstrate the variance in the operation of vertical axis and horizontal axis WECS and its installation towards power production. • Infer the knowledge on various energy sources including ocean, tidal and biomass conversion technologies. • Realize the need of energy harvesting and describe the methods of storage systems to achieve the sustainability in the energy sector.	**Regional, National, Global developmental needs**

			Course Objectives	Course Outcomes	
2	ASTROPHYSICS	P720C	• To introduce the students to universe and its evaluation. • To impart knowledge on galaxies and its types. • To understand the basic structure and properties of milky way galaxy. • To provide an overview of solar system. • To learn methods of estimating astronomical distances and temperature and radius of stars	On successful completion of the course, the students will be able to • Understand and explain the origin of Universe and predict the present age of the universe. • Describe the classification of galaxies. • Acquire basic knowledge of milky way galaxy and its properties. • Explain the Solar system and its origin. • Estimate astronomical distances and temperature and radius of stars.	**Regional , National , Global developmental needs**
3	APPLIED ELECTRONICS	P631	• To learn about basic logic gates, DeMorgan's theorems, Simplification of Boolean expressions and implementation of logic circuits using NAND-NAND logic. • To learn design, working and truth table of combinational circuits. To study about different logic families and flip flops.	On successful completion of the course, the students will be able to • Simplify Boolean expressions using K-map and design NAND-NAND logic circuits. • Construct arithmetic circuits and explain their operation. Compare different logic families and explain the working of various flip flops.	**Regional, National, Global developmental needs**

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Accredited by NAAC (4th Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Name of the Programme: M.Sc Physics

S No	Title Of The Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	Mathematical Physics - I	P717	- To understand the basic concepts of matrices and complex numbers - To impart the knowledge of the integral transforms such as Fourier transform and Laplace transform in detail. - To make the students to understand and solve problems on linear differential equations and series solutions of differential equations - To enable the students to understand the basic principles and importance of tensor analysis, - To learn the basic notations, theorem and probability distribution in physics.	- Revise and understand the concepts of matrices and to perform basic mathematical operations (arithmetic operations) with complex numbers in Exponential, circular functions and hyperbolic functions. - Distinguish between Fourier and Laplace transform, and make them to apply the knowledge of F.T, L.T and Finite Fourier transforms in finding the solutions of differential equations, initial value problems and boundary value problems. - Classify linear and partial differential equations and can solve problems of 1st and 2nd order linear differential equation, their solutions, also series solutions of linear differential equation. - Understand tensors and their concise mathematical framework for formulating and solving physics problems in areas such as elasticity, fluid mechanics, and general relativity. - Acquire the basic knowledge on probability concepts and theorems of probability	global developmental needs
2	Classical Mechanics And Statistical Mechanics	P718	- To introduce the classical formulation approaches like Lagrangian and Hamiltonian dynamics and to study their application in mechanical systems and solving of problems. - To disseminate the theory and methods of Hamilton Jacobi's Formulation and small oscillation theory that can be effectively applied to solve mechanical problems.	- Have in-depth knowledge about Lagrangian and Hamiltonian dynamics - Apply and solve problems in mechanical systems using Hamilton-Jacobi and Small Oscillations. - Demonstrate and analyse principal coordinates and the principal moments of inertia for arbitrary rigid body application. - Learn different statistical ensembles, their distribution functions, ranges of applicability	global developmental needs

				and the corresponding thermodynamic potentials. • Acquire knowledge to calculate basic thermo dynamical quantities: energy, specific heat, entropy, Helmoltz free energy, etc in classical and quantum statistical models.	
			• To educate the students to identify, formulate and solve problems in rigid body dynamics. • To review the fundamental concepts of thermodynamics and to create an understanding of the principles of classical and quantum Statistical Mechanics and their applications. • To develop quantum simulations that bring into the statistical description using Bose-Einstein and Fermi-Dirac Statistics.		
3	Quantum Mechanics – I	P719	• To provide an understanding of fundamental principles of quantum mechanics and the one-dimensional applications of Schrodinger's equation. • To introduce the students to the basic ideas of operator formalism and also to apply Schrodinger's equation for three-dimensional quantum problems. • To gain knowledge on matrix formalism and to analysis the symmetries and conservation laws in unitary transformations. • To impart the knowledge on time independent approximations in quantum mechanics. • To make the students to understand the concepts of angular momenta and their commutational rules and also matrix representations.	• Gain knowledge of development of quantum ideas and learn the wave nature of matter, uncertainty principle, Schrodinger's wave equation and its one-dimensional applications. • Understand the operator formalism and its application for one dimensional and three-dimensional quantum problems. • Gain knowledge on matrix formalism and unitary transformations. • Understand the importance of few time dependent approximations and their applications. • Acquire the knowledge on angular momentum, identical particles and Pauli's spin matrices.	global developmental needs

4	Elective: Energy And Environmental Physics	P720B	- To introduce the students to energy and various types of energy conversion techniques, energy collection and laws of thermodynamics. - To impart the knowledge on nonrenewable energy to the students. - To ensure that the students gain knowledge regarding renewable energy. - To introduce the students regarding Bioenergy Resources and Fuel Cells - To enlighten the students regarding the energy crisis and environmental pollution and to inculcate various means to control pollution to safeguard environment.	- Gain knowledge about energy, energy harvesting and saving. - Acquire ideas about nonrenewable energy. - Understand and gain knowledge about renewable energy. - Gain knowledge about Biomass and various types of Fuel Cells. - Be aware of environmental pollution and will know how to control them.	global developmental needs
5	Mathematical Physics - Ii	P820	- To provide an insight into complex analysis and enable the students to solve problems. - To make the students to learn Green's function and its applications in different fields of physics. - To impart the knowledge to understand series solutions and special functions and enable them to apply it to solve Physics problems. - To make the students learn to solve various types of problems related to numerical techniques. - To enable the students to understand the basics of group theory, that will make them to analyze symmetries and their implications in the field of Physics.	- Acquire the knowledge of complex derivatives function and operate analytic functions, and solve problems in complex integrations. - Understand homogeneous and non-homogeneous equation to solve Green's functions along with boundary value problems. - Gain the knowledge of series solutions and special functions and enable them to apply and solve problems in classical, statistical, quantum mechanics and electromagnetism. - Distinguish numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, and solution of first order differential equations and enable them to solve problems. - Recognize the basic ideas of groups, representations of groups, character table formation and application of group theory.	global developmental needs

6	Quantum Mechanics–Ii	P822	• To understand the concept of time dependent perturbation theory. • To provide knowledge on scattering theory in quantum mechanics. • To learn basic ideas of relativistic quantum mechanics of charged particles • To impart knowledge on Dirac equation and the transformations for Dirac equation. • To introduce the students to quantum field theory through the learning of relativistic Lagrangian and Hamiltonian formalisms.	• Learn and understand the fundamental principle of time dependent perturbation theory and its application to physical situations. • Gain knowledge on scattering phenomena occurring in quantum mechanics. • Understand the fundamental principles of relativistic quantum mechanics and solution of KG equation for charged particles in electromagnetic field. • Acquire knowledge of Dirac equation and matrices and their role in Lawrence transformation of Dirac equation. • Understand the concept of quantum field theory by learning relativistic Lagrangian and Hamiltonian formulations.	global developmental needs
7	Solid State Physics	P917	• To provide an understanding of the basics of crystal physics and X-ray diffractions • To introduce the concept of Lattice dynamics • To familiarise the various theoretical models to study the properties of matter from a microscopic point of view. • To provide an understanding of magnetic materials and theirproperties. • To familiarise with superconducting materials.	• Understand crystal structure and diffraction of X-rays in materials • Acquire knowledge; understand the behaviour of electrons in solids based on classical and quantum theories and various theories of specific heat capacities of solids. • Understand theoretical backgrounds of metals and semiconductors • Describe the theories of magnetic materials and how the susceptibility varies with temperature. • Explore superconductivity and its applications.	global developmental needs

8	Atomic And Molecular Spectroscopy	P918	• To provide a knowledge of interaction of electromagnetic radiation with atoms and molecules and systematically introduce to spectra and basic theoretical concepts in spectroscopic methods. • To expose to the fundamental principles of various spectroscopic techniques for structural applications. • To understand the theory and principles of electronic and vibrational and its techniques. • To Study microwave spectroscopy and its advantages/applications. • To understand the physics behind NMR and ESR spectroscopy, Mossbauer spectroscopic techniques.	• Apply their knowledge and understand different branches of spectroscopy and carry out experimental and theoretical studies on atoms and molecules with focus on the structure and dynamics. • Apply the knowledge of spectroscopy in interdisciplinary subjects like chemistry, mathematics and biological systems. • Handle relevant experimental equipment and evaluate experimental results obtained • Excel in research field related to materials science and various spectroscopic analyses. • Apply NMR and ESR spectroscopy, Mossbauer spectroscopic techniques to examine new materials for novel drugs in the field of medicine	global developmental needs
9	Elective: Optical Physics	P920B	• To introduce the concept of waves, wave packets, polarization and Brewster angle • To make the students to understand the concept of coherence and interference • To acquire knowledge of working principle of different type of lasers • To get in depth knowledge on propagation of light in the fiber and wave guides • To understand the electro-optic and magneto-optic effects and their application	• Understand the concept of waves, wave packets, polarization and Brewster angle • Distinguish spatial and temporal coherent and they can understand the spectral resolution • Realize the working principle of different type of lasers • Explain construction and applications of optical fibers • Understand and appreciate the various optical devices and their applications in different fields.	global developmental needs

| 10 | Elective: Computational Quantum Mechanics | P920C | • To introduce modern methods of molecular modeling and culminating in electronic structure modeling.
• To understand the Basic methods of molecular modeling.
• To enable the students to acquire knowledge Roothaan-Hall Hartree-Fock method and its application
• To introduce Ab initio formalism of quantum computation.
• To explore the Knowledge on Density Functional theory and its application. | • Understand quantum mechanical approximation models necessary for the description of molecules and atoms.
• Understand the relationship between the energy levels obtained as solutions to the time-independent Schrödinger equation and measurements made using spectroscopic methods.
• Plan and apply computer-based calculations to determine the geometry, energies and electronic properties of molecules.
• Describe theoretical methods and plan and conduct computer-based calculations of chemical properties in molecules
• Present and discuss density functional theory for computing the energy of molecules through a one-electron Schrödinger equation that includes electron correlation. | global developmental needs |
| 11 | Self-Study Paper: Research And Publication Ethics | | • To create awareness about publication ethics and publications misconduct
• To analyse the academic integrity and to create awareness about predatory publications
• To understand the publication ethics, authorship and contributorship-Identification of publication misconduct etc.
• To identify good journals for publishing one's research article
• To check plagiarism using plagiarism software like Turnitin, Urkund and other open source software tools. | • Infer the knowledge about the ethics with respect to science and research, Intellectual honesty and research integrity scientific misconducts etc.
• Acquire awareness about publication ethics and publications misconduct
• Acquire knowledge about predatory and fraudulent journals
• Identify good journals for publishing their research articles
• Check plagiarism using plagiarism software like Turnitin, Urkund and other open source software tools. | global developmental needs |

12	Elective: Modern Optics	P1017A	• Provide a thorough foundation in the optical physics of both second order and third order nonlinear optical phenomena. • Understand nonlinear phenomena from the fundamental perspective of quantum mechanics. • To understand third order nonlinear optical phenomena of the materials. • To expose the students to the optical fiber communication systems and to explain the importance and advantages of optical fiber communications, basic problems and possible mitigations. • To understand the fundamentals of optical properties of materials for various applications.	• Predict the frequencies generated by a nonlinear optical process • Understand stimulated Raman and Brillouin scattering • Estimate the upper bound of optical power in silica fiber due to nonlinearity • Recall the basic structure of an optical fiber and the pulse propagation in optical fibers and also can explain the various types of dispersions in optical fibers and their mitigations by deploying various types of optical fibers • Obtain knowledge about optoelectronic materials, their properties and applications.	Global developmental needs
13	Analytical Instrumentation And Characterization Techniques		• To introduce to the students the basics of X-Ray diffraction in solids and train them collect and interpret the X-ray data. • To recall Beer's law and the basics of UV-Visible spectroscopy and give them the hands-on-training on collection and interpretation of data. • To provide hands-on-training on collection and interpretation of FTIR data. • To provide hands-on-training on collection and interpretation of dielectric data • To provide hands-on training on photoacoustic spectrometer.	• Collect and interpret the X-ray data and draw conclusions. • Acquire the skills needed for the interpretation of data collected from UV-Vis spectrometer. • Interpret FTIR spectra. • Draw plots and make conclusions from them. • Get the knowledge about photoacoustic spectrometer	Global developmental needs

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Name of the Programme: B.Sc Chemistry

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ORGANIC CHEMISTRY – II	CH316	• Understanding substitution and elimination reactions. • Understanding metal carbon bonds	• Understand and show the effect of pka values on acidic strength and the structure of organic compounds • Outline thermodynamic versus kinetic controlled reactions • Discuss the addition reaction of nucleophiles, electrophiles, free radical in ring and open systems. • Attribute stereochemical fates for substrates undergoing, addition, and substitution and elimination reactions. • Investigate the mechanistic pathway of competition between elimination or substitution reactions. • Develop synthetic routes using organometallic reagents for organic molecules.	Global developmental needs

2	ORGANIC CHEMISTRY - IV	CH546	• Understanding the reactivities of carbonyl compounds. • Understanding oxidation and reduction reactions	• Comment on the rate of reactivity of aldehydes and ketones; outcome of hydrolysis of amides, imides, nitriles; associate the micelle concept with the action of soap and detergents • sketch the reactions of various functional organic molecules with Grignard reagent and predict the nature of product • Relate the acidity of alpha-carbon of various carbonyl compounds, enolate ion formation process and its selectivity in product formation • Integrate the enolate ion chemistry with various naming reactions with mechanism • Illustrate the carbonyl group interconversion through various oxidation, reduction processes with stereochemistry • Build the comparative study on acidity and basicity of amines and the chemistry of aromatic six member heterocycle	Global developmental needs
3	PHARMACEUTIC AL CHEMISTRY	CH549A	• To acquire a sound knowledge about the chemistry of drugs and their mechanism of action. • To learn about various types of diseases, their cause and cure through conventional and modern medicine.	• Define and explain the basic concepts involved in the pharmaceutical chemistry • Describe and summarise about the cause and treatment of several diseases and practice methods to treat and prevent them • Recognize the existence of various drugs available and compare the mechanism of action • Describe the utility of various drugs	Global developmental needs

				• and learn to employ them whenever needed • Observe the cause and treatment of various disorders and recommend measures to prevent or rectify them • Explain the effectiveness of drugs and hypothesize drug designing strategies	
4	POLYMER CHEMISTRY	CH642A	• To understand the mechanism of polymerization, various techniques of polymerization • To learn about the characterization of polymers by molecular weight, reactions and degradation of polymers. • To learn the applications and appreciate the recent developments of polymers	• Students will Understand about the basics of polymer and the differences between crystalline melting temperature and glass transition temperature, as well as the effect of kinetics on both. • Students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field of Polymer Chemistry. • Students will be able to evaluate the effect of factors such as polymer structure, molecular weight, branching and diluents on crystallinity. • Students will also able to about the mechanical properties and applications of polymers. • Understand basic aspects of the solution properties of polymers, interactions and the relationship to chemical structure, including phase behaviour and the measurement of molecular weight.	Global developmental needs

5	GREEN CHEMISTRY	CH642C	• To understand the environmental concern and shrinking resources • To learn the environmental friendly products and procedure. • To take a natural view of different chemical processes	• Gain knowledge about the environmentally friendly products and procedure. • Appraising Micro Wave and Ultra sound assist organic synthesis • Relate and asses the applications of green synthesis. Comparison of heterogeneous and homogenous catalysis and photo catalysis • Analyse the organic compounds which found in application green synthesis • Understand the environmental concern and shrinking resources • Designing next generation agrochemicals from natures, using green reagents and bio catalyst.	Global developmental needs

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Name of the Programme: M Sc. Chemistry

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ELECTIVE – II: GREEN CHEMISTRY	CH719B	• To know eco-friendly methods of synthesis. • Understanding the synthesis of any type of organic compounds with the revolution of Green Chemistry	• Understand and compare the eco-friendly methods of synthesis. • Appraising the measurement, Prevention and control of life-cycle assessment • Relate and asses the Renewable energy as Biomass, Fossil Fuels, solar energy and some other natural chemical resources. • Analyse the organic compounds which found in application of green synthesis with the revolution of Green Chemistry. • Compare and analyze Green Technology and Alternative Energy Sources such as Microwaves, Electrochemical synthesis • Design the next generation agrochemicals and Industrial Case Studies from natures, using green reagents and bio catalyst.	Global developmental needs

2	ELECTIVE –I RESEARCH METHODOLOGY	CH821A	• To learn the purpose and methods of research • To study the interpretation of knowledge of e-sources in literature search • To write a scientific report based on the research done	• Understanding the importance of the research and to demonstrate high ethical values in research • Employ different methodologies to conduct a literature survey • Analyse and execute a proper literature survey for a chosen problem in their respective field of research • Integrating various level of hypothesis in analysing the data obtained during the research and interpret them • Organizing and evaluating the data obtained using various software's • Compile a research article using the art of technical writing and subsequently publish	Global developmental needs
3	INORGANIC CHEMISTRY – III	CH919	• To study about the basic theory of Inorganic spectroscopy. • To illustrate the UV, IR and Raman spectral properties of some inorganic compounds and complexes. • To study and illustrate the different types of magnetic behaviour in inorganic materials. • To learn the basic concepts of superconductivity behaviour in the materials • To apply the NMR, NQR,	• Students can recognize and interpret the spectroscopic techniques in terms of interaction of electromagnetic radiation with molecules • Students can infer about the magnetic properties and superconductivity of materials and can able to calculate the magnetic susceptibility of the materials. • Students can describe the principles and to interpret the instrumentation of various spectroscopic techniques. • Students can illustrate the principle involved in ESR, NQR and Mossbauer Spectroscopy and distinguish chemical species using these spectroscopy	local, regional ,national and global developmental needs

			ESR and Mossbauer techniques in to simple inorganic systems. • To learn the instrumentation of advance inorganic spectroscopy techniques.	• Students can apply the principles of spectroscopy to predict the structure of compounds and analyse the various spectra of complexes • Students can able to propose and formulate the structure of a new compound based on the spectroscopic data	
4	ELECTIVE-III: INORGANIC PHOTOCHEMISTRY & MATERIALS SCIENCE	CH921A	• To provide the students with basic information on matter radiation interactions and their consequences excited state formation modes, photophysical and photochemical deactivation pathways, and application of theoretical knowledge. • Students are equipped with the knowledge on composition, molecular and electronic structures of inorganic compounds. • Students will know to identify and quantify the course of photophysical and photochemical processes.	• Understand the photochemical pathways in various chemical reactions • Elucidate the photophysical kinetics of unimolecular reaction evaluating using Stern-Volmer equation. • Understand weak and strong interaction in photochemical process and construct a mechanism for transformation of low energy reactants to high energy products. • Elucidate the mechanism involved in various metal complex systems. • Learn and apply the principles of the materials and constructing a reaction methodology using various precursor molecules. • Elucidate the imperfections in the crystal lattice and describing the phase transformation in inorganic materials.	National and global developmental needs

5	ELECTIVE – II: POLYMER CHEMISTRY	CH921B	• To gain knowledge in the preparation, properties, characterization and uses of polymers. • To appreciate the role and applications of polymer substances	• Understand different types of polymers and learning the polymerization techniques • Enumerate the reaction mechanism that takes place in the polymers • Demonstrate the structural morphology of polymers • Determining the molecular weights using different techniques. • Devise synthetic methodology for industrial polymers and assessing its importance • Elucidate the synthetic methods of various novel polymers.	Global developmental needs

| 6 | PHYSICAL CHEMISTRY PRACTICAL- II | PCH1015 | • To understand the principles that govern the basic electrochemical experiments
 • To learn the physical methods used in determination of parameters such as pH, conductance and EMF etc. | • Learn and apply the principles of conductometry and potentiometry effectively for various titrations
 • Explain the conductometric titration of strong acid, weak acid and mixture of acids with strong Base.
 • Determine the equivalent conductance of strong electrolytes at infinite dilution and dissociation constant of weak electrolyte
 • Calculate the pH of a buffer solution using emf measurements
 • Prepare a salt bridge for potentiometric experiments.
 • Verify the various laws like Ostwald's dilution law and Kohlrausch's law conductometrically and design working electrodes | local, regional ,national and global developmental needs |

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Name of the Programme: B. Sc. Computer Science

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	PROBLEM SOLVING TECHNIQUES	CS120	• To develop problem solving skills with top down design principles. • To become competent in algorithm design and program implementation. • To develop skills to apply appropriate standard methods in problem solving	• Upon Completing the Course, Students will be able to: • Develop programming techniques required to solve a given problem. • Develop problem solving skill using top – down design principles. • Design an algorithm for a problem. • Develop techniques to handle array structure • Develop techniques such as searching and sorting	**Global developmental needs**
2	WEB DEVELOPMENT USING HTML	CS121	• To provide a comprehensive overview of the two largest Web technologies, Hyper Text Markup Language (HTML), and Cascading Style. • To learn through hands-on,	• Upon Completing the Course, Students will able to: • Use knowledge of HTML and CSS code and an HTML editor to create personal and/or business websites	**Global developmental needs**

			practical instruction that will assist the students to tackle the real-world problems they face in building websites today—with a specific focus on HTML and CSS • To develop an ability to design and implement a web site	following current professional and/or industry standards. • Use critical thinking skills to design and create websites	
3	DIGITAL COMPUTER FUNDAMENTALS	CS221	• To explore the Number System, Number Conversion from one Base to another Base and Complements. • To understand the Logic Gates, Boolean Algebra and to design the Logical Circuits. • To simplify the Boolean Functions using K-Map Method • To Learn Combinational circuits as Adders and Subtractors, Encoders and Decoders. • To Learn the different types of Flip-Flops such as SR Flip flop, JK Flip flop, T Flip flop and D Flip flop .	• Perform conversions among different number systems, to be familiar with basic logic gates, • Draw the Logic circuits and truth table for Boolean functions • Simplify Boolean functions by using k-map method and Boolean Laws and Theorems. • Design of combinational circuits such as Adder, Subtractor, Multiplexer, Encoder and Decoder etc. • Understand the design of sequential Circuits such as Flip-Flops, Edge-trigger and master slave flip flops.	**Global developmental needs**
4	PROGRAMMING USING C	CS222	• To enhance analyzing and problem-solving skills and use the same for writing programs in C. • To develop logics which will help them to create programs, applications in C. • To use the comparisons and limitations of the various programming constructs and	• After course completion the students will have the following Course Outcomes: • Understanding a functional hierarchical code organization. • Ability to define and manage data structures based on problem subject domain. • Ability to work with textual information, characters and	**Global developmental needs**

			choose the right one for the task in hand. • To enter the program on a computer, edit, compile, debug, correct, recompile and run it.	strings. • Ability to work with arrays, structures, pointers and files.	
5	COMPUTER ORGANIZATION AND ARCHITECTURE	CS322	• To understand the basics of Computer Organization. • To know the relationship between computer instruction and the Machine code execution. • To know about the various types of CPU Organization and Addressing Modes. • To recognize the need of interface between CPU and Input / Output devices. • To think critically, independently, and quantitatively about Computer Memory.	• Study basic computer organization, design andmicro-operations. • Prepare machine code from the instructions • Understand CPU organization and different types of addressing modes. • Understand how the Input/ Output devices communicate with the computer • Learn various methods and techniques of memoryorganization.	**Global developmental needs**
6	DATA STRUCTURES AND ALGORITHMS USING C	CS323	• To provide the knowledge of basic data structures and their implementations. • To understand importance of data structures in context of writing efficient programs. • To develop skills to apply appropriate data structures in problem solving	• Upon Completing the Course, Students will able to: • Learn the basic types for data structure, implementation and application. • Know the strength and weakness of different data structures. • Use the appropriate data structure for a given problem. • Develop programming skills required to solve a given problem.	**Global developmental needs**

| 7 | SOFTWARE ENGINEERING | CS422 | • Understand the principles of large scale software systems, and the processes that are used to build them.
• Acquire ability to the software-development process, including requirements analysis, design, programming, testing and maintenance.
• Understand the Communication issues in large, complex software projects.
• Understand purpose and importance of the project management from the perspective of planning, tracking and completion of project. | • Upon completion of this course, students should be able to:
• Plan and deliver an effective software engineering process, based on knowledge of widely used development lifecycle models.
• Employ group working skills including general organization, planning and time management and inter-group negotiation.
• Capture, document and analyze requirements.
• Translate a requirements specification into an implementable design, following a structured and organized process.
• Make effective use of UML, along with design strategies such as defining a software architecture, separation of concerns and design patterns.
• Formulate a testing strategy for a software system, employing techniques such as unit testing, test driven development and functional testing.
• Evaluate the quality of the requirements, analysis and design work done during the module. | **Global developmental needs** |

8	RELATIONAL DATABASE MANAGEMENT SYSTEMS	CS423	• To understand the basic principles of Databases and DataModels. • To know about the Relational Data Structures and Relational Algebra. • To understands the concepts of Functional Dependency and Normalization. • To learn the features and to write Queries usingSQL. • To explore the organization and to acquire skills in developing programs usingPL/SQL.	• Gain a good understanding of the architecture functioning of database management systems as well as associated tools and techniques. • Implement the Entity Relationship Diagram using various E-R Diagram Symbol. • Develop a good database design using normalization techniques. • Understand the use of structured query language & PL/SQL, its syntax, its working and its scope. • Acquire a good understanding of database systems concepts and to be in a position to use and design databases for differentapplications	**Global developmental needs**
9	PROGRAMMING USING JAVA	CS540	• To acquire the programming skills in core java applications. • To learn the art of GUI programming with Applet. • To write interface with Applet Controls. • To understand the Layouts of Applets. • To establish database connectivity. • To learn the Interaction between AWT control and Data Base.	• Upon completion of this course, students should be able to: • Understand the concept of OOP as well as the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading. • Identify classes, objects, members of a class and the relationships among them needed for a specific problem. • Create Java application programs using sound OOP practices (e.g., interfaces and	**Global developmental needs**

				APIs) and proper program structuring (e.g., by using access control identifies, and create user define package for specific task,(reusability concepts) error exception handling) • Develop programs using the Java standard class library. • Develop software in the Java programming language, (using applet, AWT controls, and JDBC)	
10	WEB DEVELOPMENT USING XML	CS541	• To know how to represent data over the Web using XML. • Understanding of the XML Document Object Model. • Understanding xml DTD and its uses. • Understanding xml schema and its uses. • Understanding JSON and its uses	• Upon completion of this course, students should be able to: • Describe how namespaces are used in XML. • Follow XML syntax rules. • Validate XML using DTD. • Construct XSLT style sheets for transforming HTML. • Construct XPath expressions for use within XSLT style sheet templates. • Be able to write the schema for the given XML documents in both DTD and XML Schema languages. • Be able to parse XML documents by using DOM.	**Global developmental needs**
11	PROGRAMMING USING PHP	CS542	• To learn about PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages	• Upon completion of this course, students should be able to: • Understand process of	**Global developmental needs**

				• To Understand File handling concepts • Understanding PHP code to connect, access, and update a MySQL database • Understanding PHP using XML	executing a PHP-based Script on a webserver. • Understand basic PHP syntax for variables use and standard language constructs, such as conditional and loops. • Storing data in arrays. • Using PHP built-in functions and creating custom functions • Understanding POST and GET in form submission. • How to receive and process form submission data. • Reading and writing cookies. • Create a database in phpMyAdmin Read and process data in a MySQL database.	
12	OPERATING SYSTEMS	CS543		• To acquire the principles of Operating System, Process, its Description, Uniprocessor and Multiprocessor and its Scheduling Techniques. • To understand the concept of Mutual Exclusion, Deadlock and its detection, prevention & avoidance. • To learn the various Main Memory and Virtual Memory Management techniques. • To explore the Organization and Management of I/O, Disk and File Managements.	• To make students able to learn different types of operating systems along with concept of file systems and CPU scheduling algorithms used in operating system. • To provide students knowledge of memory management schemes and I/O handling algorithms. • At the end of the course, students will be able to implement various algorithms required for management, scheduling, allocation and communication used in operating system.	**Global developmental needs**

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				• Able to compare & constant various scheduling algorithm	
13	COMPUTER GRAPHICS	CS544 A	• Understand the Role and importance of Algorithms like Line drawing Algorithm, Circle drawing Algorithm, Character generating Algorithm. • Understand 2D and 3D Transformations. • Understand various Clipping Algorithms like point clipping, line clipping and polygon clipping. • Understand the importance of the User Dialogue and various input functions. • Understand the Visible Surface Detection Methods.	• To provide comprehensive introduction about computer graphics system, design and two dimensional transformations. • To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations. • Prepares the students for activities involving in design, development and testing of modeling, rendering, shading and animation	**Global developmental needs**
14	DATA MINING AND WAREHOUSING	CS544 B	• To understand data mining principles and techniques and Introduce DM as a cutting edge business intelligence • To expose the students to the concepts of data warehousing architecture and implementation • To study the overview of developing areas – web mining, text mining and ethical aspects of data Mining • To identify business applications and trends of data mining		**Global developmental needs**

15	DECISION SUPPORT SYSTEM	CS544 C	• To introduce the decision making system, models and support • To appraise the general nature and range of decision support and group support systems • To impart about knowledge based system and advanced intelligent systems		**Global developmental needs**
16	SOFTWARE TESTING AND QUALITY ASSURANCE	CS544 D	• To introduce various approaches, techniques, technologies, and methodologies used in software testing and quality assurance. • To understand the role of testing in applications • To learn to design the test cases • To know the different levels of testing • To study the state-of-the-art of software testing and quality assurance		**Global developmental needs**
17	MOBILE APPLICATIONS DEVELOPMENT	CS633	• To develop a mobile application. • To understand the concept of SQLite	Upon completion of this course, students should be able to: • Describe the platforms upon which the Android operating System will run. • Create a simple application that runs under the Android operating system. • Access and work with the Android file system. • Create an application that uses multimedia under the Android operating system. • Access and work with	**Global developmental needs**

			database under the Android operating system.	
18	PROGRAMMING USING PYTHON	CS634	• Develop basic understanding of the basics of Python programming language. • Learn core Python scripting elements such as data types and flow control structures. • Design simple applications using Python.	After this course, the student will be able to • Understand and apply Python's core data types while writing new programs. • Express different decision making statements and functions • Understand and summarize the different file handling operations	**Global developmental needs**
19	LINUX AND SHELL PROGRAMMING	CS635	• State the major components and describe the architecture of the UNIX operating system. • To learn and understand UNIX commands. • State how the shell functions at the user interface and command line interpreter. • Create structured shell programming with flow control constructs.	Upon completion of this course, students should be able to: • Understand the basic Unix command • Understand the concepts piping and redirections. • Create a shell script using VI editor. • Able to develop using shell script to solve simple application problem.	**Global developmental needs**
20	MICROPROCESSOR USING 8086/88	CS636	• To Understand the basic architecture of the Microprocessor • To learn the instruction sets of the processor • To write applications using assembly level language program • To study the input/output interfaces of the processor • To understand the importance	At the end of the course, students should be able to: • Identify the types of instructions and the organization of registers and memory • Describe the translation model of assembly language to machine language. • Understand the micro-program by mapping the instructions.	**Global developmental needs**

				of interrupts in programming	• Recognize the types of computer organizations. • Accept the better ways of Parallel and Vector processing.	
21	COMPUTER NETWORKS	CS637 A	• To learn the basic concepts of Computer Networks	• To explain how communication works in computer networks and to understand the basic terminology of computer networks • To explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack. • To understand design issues in Network Security and to understand security threats, security services and mechanisms to counter it.	**Global developmental needs**

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Name of the Programme: M Sc. Computer Science

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	PRINCIPLES OF COMPILER DESIGN	MCS170T	• To know the basic concepts of compilers. • To explore the phases of a compiler • To know how the source program is executed in the compiler. • To bring in the types of grammar • To develop opcode for the code generation phase.	• On successful completion of this Course, students will be able to • Clarify the role of compiler in programming language. • Describe the lexical analysis, syntax analysis, intermediate code generation, code optimization and code generation. • Demonstrate the need and role of the parser, context free grammars. • Organize the syntax tree for any given expressions. • Compare the different phases of the compiler and its uses. • Develop opcode for the code	global developmental needs

				generation phase.	
2	ADVANCED JAVA PROGRAMMING	MCS171T	• To introduce programming with Applet and AWT. • To give an overview of database access and details for managing information using the JDBC API. • To examine the use of networking and collections. • To learn how to program Servlet and JSP. • To understand the web programming concepts in the perspective of Client and Server.	• On successful completion of this Course, students will be able to • Discover various techniques used Applet Programming. • Relate Abstract Window Toolkit(AWT) and Events to design Java Applications • Infer CRUD operations of the database using JDBC • Examine collections and networking with jav.net and java.net packages • Evaluate various server side programming in java. • Produce web based java Applications using Servlet and JSP.	global developmental needs
3	WINDOWS APPLICATIONS	MCS172T	• To know the differences between desktop and web application. • To construct classes, methods, and accessor and instantiate objects. • To create and manipulate GUI components in C#. • To code solutions and compile C# projects within the .NET framework. • To build own desktop	• On successful completion of this Course, students will be able to • Recognize the differences between desktop and web applications • Demonstrate the classes, methods, accessor and instantiate objects • Build own desktop application with Database	global developmental needs

			application with Database	• Analyze the features of Windows Presentation Foundation (WPF) • Find the way to code solutions and compile C# projects within the .NET framework • Create and manipulate GUI components in C#.	
4	OPEN SOURCE TECHNOLOGIES	MCS173T	• To learn designing webpage using HTML & CSS • To understand the concept of Database • To learn Server-side scripting language • To introduce applications using PHP with MYSQL	• On successful completion of this Course, students will be able to • Clarify the concept of open source technologies and tolls. • Describe the basics of the Internet like WWW, DNS, web hosting, web publishing, search engines, and protocols. • Solve programs using HTML for web page creation and updating. • Examine the working process of any website in real time. • Compare between client side script and server side script. • Develop websites using HTML, CSS, PHP, MySQL tools.	global developmental needs
5	ELECTIVE – I: A. WEB SERVICES	MCS174A	• To examine fundamental XML technology • To understand the use of JSON • To gain an understanding about	• On successful completion of this Course, students will be able to • Understand the use of web	global developmental needs

			the role of web services in commercial applications • To learn the emerging standard protocols like SOAP, WSDL and UDDI. • To introduce the role of web services in CMS	services in B2C and B2B applications. • Efficiently design principles and application of SOAP and REST based web services. • Identify and select the appropriate framework components in creation of web service solution • Apply OOP principles to creation of web service solutions. • Implement an application that uses multiple web services in a realistic business scenario. • Design collaborating web services according to a specification.	
6	ELECTIVE-I : B. DATA MINING AND WAREHOUSING	MCS174B	• On successful completion of this Course, students will be able to • Recognize the basic concepts of data mining • Understand the techniques of data classification using various algorithms • Characterize the role of data mining techniques in various fields • Apply various clustering methods for analysis • Develop skill in selecting the	• To understand data mining principles and techniques. • To expose the students to the concepts of data warehousing architecture and implementation. • To study the overview of developing areas – web mining, text mining and ethical aspects of data mining. • To identify business applications and trends of data mining.	global developmental needs

				appropriate data mining algorithm for solving practical problems • Handle the process of data analysis, identifying the problems, and choosing the relevant models and algorithms to apply.	• To understand the concept of web mining.	
7	PRACTICAL - I: ADVANCED JAVA PROGRAMMING	MCS175P		• To introduce programming with Applet and AWT. • To give an overview of database access and details for managing information using the JDBC API. • To Examine the use of networking and collections. • To learn how to program Servlet and JSP. • To understand the web programming concepts in the perspective of Client and Server.	• On successful completion of this Course, students will be able to • Experiment Applet Programming using various techniques • Tabulate simple window Abstract Window Toolkit(AWT) and Events to design window based applications • Demonstrate CRUD operations of the database using JDBC • Examine collections and networking with java.util and java.net packages • Develop server side programs in the form of Servlets • Interpret the Java Applications using JSP Tags	global developmental needs

8	PRACTICAL - II: WINDOWS APPLICATIONS	MCS176P	• To show the behavior of the Reflection • To Demonstrate the basic concepts of OOPS • To Apply the ADO.NET to establish the connection with database • To focus the windows forms controls to create windows applications • To create the desktop applications with database	• On successful completion of this Course, students will be able to • Show the behavior of Reflection • Demonstrate the basic concepts of OOPS • Apply the ADO.NET to establish the connection with database • Focus the windows forms controls to create windows applications • Find the way to code solutions and compile C# projects with WPF • Create desktop application with database	global developmental needs
9	PRACTICAL - III: OPEN SOURCE TECHNOLOGIES	MCS177P	• learn designing webpage using HTML & CSS • understand the concept of Database • learn Server-side scripting language • introduce applications using PHP with MYSQL	• On successful completion of this Course, students will be able to • Find the usages of open sources technologies. • Explain the process of website creation to any kind of real time problem. • Solve the problem using HTML, CSS, PHP, MySQL, and JSON. • Examine the methods to develop and design web pages. • Justify the selection of technology for given problem. • Create web pages using HTML, CSS, PHP,	global developmental needs

				MySQL and JSON.	
10	EMPLOYABILITY SKILLS	MCS178S	• To know the basic requirements of the JOB. • To know the problem in theprocess of interview. • Preparation towards taking part in the interview • To know about the communication process • To improve oneself in facinginterview	• On successful completion of this Course, students will be able to • Identify the basic requirements of the Job. • Observe the problem in the process of interview. • Establish the preparation towards taking part in theinterview. • Focus and improve the communication process. • Find the ways to improve the body language and self-grooming • Develop the skills to improve oneself in facing interview.	global developmental needs
11	DISTRIBUTED OPERATING SYSTEMS	MCS270T	• To understand the fundamental concepts of operating systems • To understand the need fordistributed systems. • To get acquainted with the design principles of distributed operating systems. • To explore the concept ofsynchronization • To handle the process in distributed environment	• On successful completion of this Course, students will be able to • Find the meaning of distributed operating system with examples. • Summarize various types of distributed computing models. • Illustrate the process, message, packet, IPC. • Discussion on two types of communication methods like synchronous and asynchronous.	global developmental needs

			Course Objectives	Course Outcomes	
				• Summarize centralized system and Distributed systems. • Describe the various communication methods like synchronous communication and asynchronous communication.	
12	ENTERPRISE JAVA PROGRAMMING	MCS271T	• To expose the knowledge of MVC and Java server faces • To provide the knowledge and skills required to develop web applications using the MVC framework provided by Apache Struts • To develop Enterprise web application using EJB. • To understand and implement the object-relation mapping using Hibernate • To explore the knowledge of Aspect Oriented Programming using Spring and Spring MVC.	• On successful completion of this Course, students will be able to • Associate JSP and Servlet using MVC approach. • Classify the ways of using JSF Tags(Core tags, HTML Tags) • Reproduce the web applications using the MVC framework provided by Apache Struts • Appraise the AOP(Aspect Oriented Programming) using Spring and Spring MVC • Prepare Enterprise web application using EJB • Integrate the Object-Relation Mapping technique with java using Hibernate	global developmental needs
13	WEB APPLICATIONS	MCS272T	• To understand the difference between desktop and dynamic web applications. • To understand the ASP.NET web application execution	• On successful completion of this Course, students will be able to • Discover the differences between static and dynamic	global developmental needs

				web application.	
			• To create and modify multi-page Web Form applications and Web Services • To demonstrate features like flow control, data access and data binding • To validate forms with in an application.	• Demonstrate the ASP.NET web application execution model. • Build own application by using the features like data access and data binding • Analyze and implement security mechanism in web applications • Find the way to code solutions and compile ASP.NET projects within the .NET framework • Create and Validate web applications	
14	PROGRAMMING IN PYTHON	MCS273T	• To know the basics of algorithmic problem solving • To read and write simple Python programs. • To develop Python programs with conditionals and loops. • To define Python functions and call them. • To use Python data structures – lists, tuples, dictionaries. • To do input/output with files in Python.	• On successful completion of the course students will be able to: • Identify the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements • Express proficiency in the handling of strings and functions. • Interpret the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets	global developmental needs

				• Explore the commonly used operations involving file systems and modules • Resolve the concepts like exception handling, data base and GUI programming. • Create Python programs for solving real world complex problems	
15	ELECTIVE-II: A. OBJECT ORIENTED ANALYSIS AND DESIGN	MCS274A	• To understand the fundamental concepts of UML diagrams. • To draw diagrams with project documentation. • To analyze the requirements given by stake holder • To design the project with examples. • To understand the Software Development Process	• On successful completion of this Course, students will be able to • Find the meaning of object oriented analysis and design. • Explain the stages of software development life cycle. • Solve problems using simple UML diagram. • Examine various class model, state model and interaction models. • Justify the differences between object oriented design and implementation. • Create UML diagrams for software development process.	global developmental needs
16	ELECTIVE II: B. SOFTWARE TESTING AND QUALITY ASSURANCE	MCS274B	• To introduce various approaches, techniques, technologies, and methodologies used in software testing and quality assurance. • To understand the role of testing	• On successful completion of this Course, students will be able to • Understand the key concepts and principles of software	global developmental needs

				testing	
			• To learn to design the test cases • To know the different levels of testing • To study the state-of-the-art of software testing and quality assurance.	• Specify and perform the activities involved in a testing process • Understand the role of ethics in the software engineering and the responsibilities of software engineers in general • Evaluate the work of peers constructively by following proven methods of peer-review, and by using the principles of research ethics • Conduct independent research in software testing and quality assurance and apply that knowledge in their future research and practice • Application of software testing techniques in commercial environments	
17	ELECTIVE-II: C. WIRELESS SENSOR NETWORKS	MCS274C	• To understand the concepts of wireless sensor networks • To understand the protocols for WSN • To get exposure on WSN environment with TinyOS and like • To understand the layered approach in sensor networks • To design WSN and analyze	• On successful completion of this Course, students will be able to • Identify different issues in wireless ad hoc and sensor networks. • Analyze protocols developed for ad hoc and sensor networks. • Address the security threats in	global developmental needs

			performance.	• ad hoc and sensor networks • Establish a Sensor network environment for different type of applications. • Classify the design issues and different categories of MAC protocols • Illustrate the issues of routing in WSN and QoS related performance measurements	
18	PRACTICAL - IV: ENTERPRISE JAVA PROGRAMMING	MCS275P	• To expose the knowledge of MVC and Java server faces • To provide the knowledge and skills required to develop web applications using the MVC framework provided by Apache Struts • To Develop Enterprise web application using EJB. • To understand and implement the object-relation mapping using Hibernate • To explore the knowledge of Aspect Oriented Programming using Spring and Spring MVC.	• On successful completion of this Course, students will be able to • Connect JSP and Servlet using MVC approach. • Classify the ways of using JSF Tags(Core tags, HTML Tags) • Reframe the web applications using the MVC framework provided by Apache Struts • Prepare Enterprise web application using EJB • Integrate the Object-Relation Mapping technique with java using Hibernate • Evaluate the AOP(Aspect Oriented Programming) using Spring and Spring MVC	global developmental needs
19	PRACTICAL - V: WEB APPLICATIONS	MCS276P	• To demonstration of Web Configuration file • To apply the web control classes	• On successful completion of this Course, students will be able to	global developmental needs

			• To develop the component programming • To create a secured web application with validation • To apply the component programming	• Show the behavior of HTML Control Classes, Control Events, Container and Input Control Classes • Demonstrate the implementation of Web Configuration file • Apply the Web control classes and control tags • Focus on the component programming • Find the way to create and code the component programming, Custom and User Controls • Create a secured web application with validation controls and database	
20	PRACTICAL - VI: PROGRAMMING IN PYTHON	MCS277P	• To know the basics of algorithmic problem solving • To read and write simple Python programs. • To develop Python programs with conditionals and loops. • To define Python functions and call them. • To use Python data structures – lists, tuples, dictionaries. • To do input/output with files in Python.	• On successful completion of the course students will be able to: • Identify the features and steps to execute Python programs. • Implement Python programs with conditionals and loops. • Use functions for structuring Python programs. • Represent compound data using Python lists, tuples, and dictionaries. • Read and write data from/to	global developmental needs

				• files in Python. • Develop user interface applications	
21	INTERNET OF THINGS	MCS370T	• To introduce the IoT and its baseline technologies. • To explore the IOT and M2M and its Connectivity technologies. • To understand the contribution of WSN and other networks towards IOT. • To implement the IOT applications using Arduino and Raspberry Pi. • To know the importance of SDN, Sensor cloud and Fog computing.	• On successful completion of this Course, students will be able to • Recall the basics of IoT and its baseline technologies. • Classify IOT and M2M and its Connectivity technologies • Prepare a simple IOT applications using sensors and Arduino board. • Integrate various Sensors with Arduino and raspberry Pi • Evaluate and adapt the importance of SDN, Sensor cloud and Fog computing.	global developmental needs
22	ARTIFICIAL INTELLIGENCE	MCS371T	• To provide a strong foundation of fundamental concepts in Artificial Intelligence • To provide a basic exposition to the goals and methods of Artificial Intelligence • To enable the student to apply these techniques in applications which involve perception, reasoning and learning • To introduce the concept of expert systems	• On successful completion of this Course, students will be able to • Understand the various searching techniques, constraint satisfaction problem and example problems- game playing techniques. • Explain the role of agents and how it is related to environment and the way of evaluating it and how agents can act by establishing goals	global developmental needs

				• Apply these techniques in applications which involve perception, reasoning and learning. • Analyze and design a real world problem for implementation and understand the dynamic behavior of a system. • Evaluate different machine learning techniques to design AI machine and enveloping applications for real world problems • Acquire the knowledge of real world Knowledge representation.	
23	DESIGN AND ANALYSIS OF ALGORITHMS	MCS372T	• On successful completion of this Course, students will be able to • Prove the correctness and analyze the running time of the basic algorithms for those classic problems • Review the basic knowledge of algorithm design and its implementation. • Assess the key techniques of Divide-and-Conquer and Greedy Method. • Examine the various problems solved by Dynamic	• To prove the correctness and analyze the running time of the basic algorithms for those classic problems. • To understand the basic knowledge of algorithm design and its implementation. • To learn the key techniques of Divide-and-Conquer and Greedy Method. • To recognize the concept of Dynamic Programming and its algorithms • To familiarize with	global developmental needs

			Programming and its algorithms • Adapt the Backtracking method to solve N-Queen, Graph coloring sum of subsets problems. • Interpret various Branch and Bound techniques for designing the algorithms .	Backtracking algorithms. • To understand Branch and Bound techniques for designing and analyzing algorithms.	
24	MOBILE APPLICATIONS	MCS373T	• To know the basis of Android application and development environment • To able to develop simple and professional application • To know the different controls in Android • To impart knowledge about handling pictures and menus • To get ready for the job opportunity in mobile application development.	• On successful completion of this Course, students will be able to • Understand about the mobile application development environment • Interpret the working process of Activities and Fragments • Use the techniques in Mobile Applications • Analyze and design a real world problem for implementation and understand the dynamic behavior of a system. • Compare the Native apps with Hybrid apps • Develop interface and design and create the job opportunity in mobile application development	global developmental needs
25	ELECTIVE - III: A. SEMANTIC WEB	MCS374A	• To learn the fundamentals of semantic web and to	• On successful completion of this Course, students will be	global developmental

	AND APPLICATIONS		conceptualize and depict ontology for semantic web. • To make a study of languages for semantic web. • To learn about the ontology learning algorithms and to utilize in the development of an application. • To know the fundamental concepts of ontology management. • To learn the applications related to semantic web.	able to. • Identify the ontology for a given domain. • Understand and develop an application using ontology languages and tools. • Discover the concepts of semantic web. • Analyze and use ontology related tools and technologies for application creation. • Evaluate the design and develop applications using semantic web. • Generalize the standards related to semantic web.	needs
26	ELECTIVE – III: B. ETHICAL HACKING & CYBER FORENSICS	MCS374B	• To understand the hacking techniques of computer forensics. • To learn about data recovery methods. • To know about threats and vulnerabilities • To identity the threats in computer forensics. • To get knowledge on data recovery	• On successful completion of this Course, students will be able to. • Identify between hackers and normal users. • Understand the principles of computer forensics for security. • Apply the data recovery methods. • Categorize between threats and the tactics. • Evaluate legal and ethical issues related to vulnerability and penetration testing.	global developmental needs

			Course Objectives	Course Outcomes	
				• Construct on the strengths and vulnerabilities of the tested network.	
27	ELECTIVE – III: C. CLOUD COMPUTING	MCS374C	• To introduce the broad perceptive of cloud architecture and model. • To understand the concept of Virtualization and design of cloud Services • To be familiar with the lead players in cloud. • To understand the features of cloud simulator • To apply different cloud programming model as per need. • To learn to design the trusted cloud Computing system	• On successful completion of this Course, students will be able to. • Discover the broad perceptive of cloud architecture and model. • Explain the Virtualization and design of cloud Services • Construct the features of cloud services • Analyze the different cloud programming model as per need. • Summarize the trusted cloud Computing system • Create and use current cloud technologies	global developmental needs
28	PRACTICAL - VII: DESIGN AND ANALYSIS OF ALGORITHMS	MCS375P	• To prove the correctness and analyze the running time of the basic algorithms for those classic problems. • To understand the basic knowledge of algorithm design and its implementation. • To learn the key techniques of Divide-and-Conquer and Greedy Method.	• On successful completion of this Course, students will be able to • Prove the correctness and analyze the running time of the basic algorithms for those classic problems • Review the basic knowledge of algorithm design and its implementation.	global developmental needs

			• To recognize the concept of Dynamic Programming and its algorithms • To familiarize with Backtracking algorithms. • To understand Branch and Bound techniques for designing and analyzing algorithms.	• Assess the key techniques of Divide-and-Conquer and Greedy Method. • Examine the various problems solved by Dynamic Programming and its algorithms • Adapt the Backtracking method to solve N-Queen, Graph coloring sum of subsets problems. • Interpret various Branch and Bound techniques for designing the algorithms .	
29	PRACTICAL - VIII: MOBILE APPLICATIONS	MCS376P	• To understand the mobile application development • To interpret the working process of Activities and Fragments • To Develop mobile application using Telephony • To create a mobile application using SMS manager • To develop the mobile application	• On successful completion of this Course, students will be able to • Understand about the mobile application development environment • Interpret the working process of Activities and Fragments • Use the techniques in Mobile Applications • Analyze and design a real world problem for implementation and understand the dynamic behavior of a system. • Compare the Native apps with Hybrid apps	global developmental needs

				• Develop interface and design and create the job opportunity in mobile application development	
30	BIG DATA ANALYTICS	MCS470T	• To understand the needs for Big Data and its environments. • To learn the basic requirements of Big Data Technologies. • To expose the knowledge of MapReduce programming framework (Hadoop). • To be familiar with NoSQL DB's Cassandra and MongoDB • To understand Hive and Pig technologies for analyzing the Big Data.	• On successful completion of this Course, students will be able to • Recall various types of digital data and big data • Review of various Big data analytics and its Technologies • Incorporate the knowledge of various NoSQL databases. • Demonstrate the NoSQL databases such as MongoDB and Cassendra • Design & assess the Big data queries using Hive and Pig	global developmental needs
31	DATA SCIENCE WITH PYTHON	MCS471T	• To know the fundamental algorithmic ideas to process data. • To learn to apply hypotheses and data into actionable predictions. • To document and transfer the results and effectively communicate the findings using visualization techniques. • To employ the Map reduce technique	• On successful completion of this Course, students will be able to • Review the basic understanding of NumPy and Pandas • Illustrate to use conditional loops and list by python • Visualizing the results of analytics effectively • Solve a simple application for data loading, Storing the files with various file formats.	global developmental needs

				• Design & assess the Visualization through Matplotlib • Prepare to perform pre-processing of data using Numpy and Pandas.	
32	MACHINE LEARNING	MCS472T	• To recognize and implement various ways of selecting suitable model parameters for different machine learning techniques • To select and implement machine learning techniques and computing environment that are suitable for the applications under consideration. • To solve problems associated with batch learning and online learning, and the big data characteristics such as high dimensionality, dynamically growing data and in particular scalability issues. • To analyze and design a real world problem for implementation and understand the dynamic behavior of a system.	• On successful completion of this Course, students will be able to • Recognize and implement various ways of selecting suitable model parameters for different machine learning techniques • Select and implement machine learning techniques and computing environment that are suitable for the applications under consideration. • Solve problems associated with batch learning and online learning, and the big data characteristics such as high dimensionality, dynamically growing data and in particular scalability issues. • Analyze and design a real world problem for implementation and understand the dynamic behavior of a system.	global developmental needs

				• Evaluate and interpret the results of the algorithms. • Design and implement machine learning solutions to classification, regression, and clustering problems;	
33	ELECTIVE – IV: A. CRYPTOGRAPHY AND NETWORK SECURITY	MCS473A	• To introduce Classical Encryption techniques • To understand the principles of encryption algorithms • To have a detailed knowledge about authentication, hash functions and application-level security mechanisms. • To introduce Network Security Concepts • To understand the System level Security	• On successful completion of this Course, students will be able to. • Recognize the security of the data over the network • Understand the research in the emerging areas of cryptography and network security. • Apply the various networking protocols. • Analyze and Protect any network from the threats in the world. • Evaluate the intrusion detection and its solutions to overcome the attacks • Generalize about how to maintain the Confidentiality, Integrity and Availability of a data.	global developmental needs

| 34 | ELECTIVE – IV: C. SOFT COMPUTING | MCS473C | • To learn the basic concepts of Soft Computing
• To become familiar with various techniques like neural networks, genetic algorithms and fuzzy systems.
• To apply soft computing techniques to solve problems.
• To introduce fuzzy systems and its applications
• To impart knowledge on developing hybrid systems | • On successful completion of this Course, students will be able to
• Understand the core concepts of soft computing techniques
• Integrate various soft computing techniques for complex problems.
• Apply suitable soft computing techniques for various applications.
• Analyze and visualize from fuzzy data
• Evaluate and interpret the soft computing techniques
• Build a personalized recommender system | global developmental needs |

| 35 | PRACTICAL – IX: DATASCIENCE WITH PYTHON | MCS474P | • To know the fundamental algorithmic ideas to process data.
• To learn to apply hypotheses and data into actionable predictions.
• To document and transfer the results and effectively communicate the findings using visualization techniques.
• To employ the Map reduce technique | • On successful completion of this Course, students will be able to
• Review the basic understanding of NumPy and Pandas
• Illustrate to use conditional loops and list by python
• Visualizing the results of analytics effectively
• Solve a simple application for data loading, Storing the files with various file formats.
• Design & assess the Visualization through Matplotlib
• Prepare to perform pre-processing of data using Numpy and Pandas. | |
| 36 | PRACTICAL – X: MACHINE LEARNING | MCS475P | • To recognize and implement various ways of selecting suitable model parameters for different machine learning | • On successful completion of this Course, students will be able to
• Recognize and implement | global developmental needs |

| | | | techniques
• To select and implement machine learning techniques
• To analyze and design a real world problems for implementation and understand the dynamic behavior of a system
• To evaluate and interpret the results of the algorithms | various ways of selecting suitable model parameters for different machine learning techniques
• Select and implement machine learning techniques and computing environment that are suitable for the applications under consideration.
• Solve problems associated with batch learning and online learning, and the big data characteristics such as high dimensionality, dynamically growing data and in particular scalability issues.
• Analyze and design a real world problem for implementation and understand the dynamic behavior of a system.
• Evaluate and interpret the results of the algorithms.
• Design and implement machine learning solutions to classification, regression, and clustering problems; | |

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Name of the Programme: MSW

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTRODUCTION TO SOCIAL WORK PROFESSION	MSW111T	• to gain knowledge about the profession of Social Work Understand the different fields of Social Work • Get exposed to the historical growth and development of Social Work	• The students will… Gain knowledge about the profession of Social Work • Understand the different fields of Social Work • Get exposed to the historical growth and development of Social Work	Global
2	SOCIAL WORK PRACTICE WITH INDIVIDUALS	MSW112T	• To gain knowledge about the primary method of social work practice with individuals • Understand the techniques and approaches of social work practice with individuals • Acquire the skill of working with individuals	• Gain knowledge about the primary method of social work practice with individuals • Understand the techniques and approaches of social work practice with individuals • Acquire the skill of working with individuals	Global
3	SOCIAL WORK PRACTICE WITH GROUPS	MSW113T	• To gain knowledge about the primary method of social work practice with groups • Understand the techniques and approaches of social work practice with groups • Acquire the skill of working with groups	• Gain knowledge about the primary method of social work practice with groups • Understand the techniques and approaches of social work practice with groups • Acquire the skill of working with groups	Global

4	SOCIOLOGY FOR SOCIAL WORK PRACTICE	: MSW115T	• Gain basic knowledge on Sociology • Understand the behaviour of human beings • To understand the role of social workers in dealing with social problems.	• Gain basic knowledge on Sociology • Understand the behaviour of human beings • To understand the role of social workers in dealing with social problems.	Global
6	CONCURRENT FIELD WORK – I (Main Core)	MSW117F	• To get exposure with regard to the various settings of social work • To undergo a group living experience and to understand the living conditions of people • To acquire the skill in street theatre and folk lore	• Got exposure with regard to the various settings of social work • Underwent a group living experience and to understand the living conditions of people • Acquired the skill in street theatre and folk lore	Global
7	SOCIAL WORK PRACTICE WITH COMMUNITIES (Main Core-4)	MSW211T	• To gain knowledge about the primary method of social work practice with communities • To understand the techniques and approaches of social work practice with communities • To acquire the skill of working with communities	• Gained knowledge about the primary method of social work practice with communities • Understood the techniques and approaches of social work practice with communities • Acquired the skill of working with communities	Global

8	HUMAN RESOURCE MANAGEMENT (Main Core-5)	MSW212T	• To gain knowledge about the management of human resources • To understand the programmes and activities of management of human resources • To acquire the skills of working with organized and un organized human resources	• Gain knowledge about the management of human resources • Understand the programmes and activities of management of human resources Acquire the skills of working with organized and un organized human resources	Global
9	MEDICAL AND PSYCHIATRIC SOCIAL WORK (Main Core-6)	MSW213T	• To identify the issues related to health, diseases and health care services by the government and private • Understand the concepts 'mental health' and 'mental illness' and understand the signs and symptoms, etiology, diagnosis and treatment of mental health problems • Gain skills to cater to services for the mentally ill	• Identify the issues related to health, diseases and health care services by the government and private • Understand the concepts 'mental health' and 'mental illness' and understand the signs and symptoms, etiology, diagnosis and treatment of mental health problems • Gain skills to cater to services for the mentally ill	Global

10	CONCURRENT FIELD WORK – II	MSW217F	• To practice the primary methods of Social Work in different settings • Understand the applicability of the methods and techniques of Social Work in the fields of social work • Enhance their skills of Social Work practice	• Practice the primary methods of Social Work in different settings • Understand the applicability of the methods and techniques of Social Work in the fields of social work • Enhance their skills of Social Work practice	Global
11	BLOCK FIELD WORK (Required)	MSW218F	• To gain experience in a social work field by being in an open or closed setting • Understand the techniques and approaches adopted by the organization • Apply the knowledge gained, in the field of social work	• Gain experience in a social work field by being in an open or closed setting • Understand the techniques and approaches adopted by the organization • Apply the knowledge gained, in the field of social work	Global
12	TRANSACTIONAL ANALYSIS (Certificate Course-1)		• To Gain knowledge about the concepts related to transaction analysis • Understand the self and others • Acquire the skills of communication and problem solving	• Gain knowledge about the concepts related to transaction analysis • Understand the self and others • Acquire the skills of communication and problem solving	Global
13	RURAL AND URBAN GOVERNANCE	MSW313A	• To gain knowledge about rural and urban governance	• Gain knowledge about rural and urban governance	Global

			• Understand the functions and activities of local self-governments • Acquire the skills of working with and through local self-governments	• Understand the functions and activities of local self-governments • Acquire the skills of working with and through local self-governments	
14	HUMAN RESOURCE MANANAGEMENT IN SERVICE SECTOR	MSW313B	• To gain knowledge about the human resource Management in service sector Understand the functions and activities of human resource practices • Acquire the skills of working in service sector	• Gain knowledge about the human resource Management in service sector Understand the functions and activities of human resource practices • Acquire the skills of working in service sector	Global
15	STRATEGIES FOR YOUTH DEVELOPMENT	MSW313C	• To understand the different strategies by which youth development could be achieved • Gain knowledge of government and private interventions in the development of youth • Acquire skills in designing capacity building programmes.	• Understand the different strategies by which youth development could be achieved • Gain knowledge of government and private interventions in the development of youth • Acquire skills in designing capacity building programmes.	Global

16	DATA PROCESSING & ANALYSIS SKILL (SPSS & NVivo) Skill Paper–SK 3	MSW316S	• To gain knowledge on SPSS and NVivo • Gain Skills and Methods to use the statistical software. • Gain experience in using SPSS & NVivo in data processing and analysis	• Gain knowledge on SPSS and NVivo • Gain Skills and Methods to use the statistical software. • Gain experience in using SPSS & NVivo in data processing and analysis.	Global
17	RESEARCH PROJECT –I	MSW318J	• To gain knowledge and skills developing a proposal for undertaking a research. • Acquire knowledge on problem formulation and review of literature. • Gain knowledge on designing the methodology and prepare tools for data collection.	• Gain knowledge and skills developing a proposal for undertaking a research. • Acquire knowledge on problem formulation and review of literature. • Gain knowledge on designing the methodology and prepare tools for data collection.	Global
18	QUALITATIVE RESEARCH IN SOCIAL WORK (Main Elective-1)	MSW314A	• To understand the concept and scope of qualitative research • Gain knowledge on the process and approaches of qualitative research • Acquire skills for data collection and documentation • Gain skills in data analysis and management	• Understand the concept and scope of qualitative research • Gain knowledge on the process and approaches of qualitative research • Acquire skills for data collection and documentation • Gain skills in data analysis and management	Global

19	THERAPEUTIC INTERVENTIONS IN SOCIAL WORK (Main Elective-1)	MSW314C	• To understand the nature, goals and prerequisites of psychopathology • Acquire knowledge about the different schools and techniques in psychotherapy. • Gain knowledge about the application of therapies as an intervention in Social Work	• Understand the nature, goals and prerequisites of psychopathology • Acquire knowledge about the different schools and techniques in psychotherapy. • Gain knowledge about the application of therapies as an intervention in Social Work	Global
20	CORPORATE SOCIAL RESPONSIBILITY (Main Elective-2)	MSW315A	• To gain knowledge about Corporate Social Responsibility • Understand the functions and activities of Social Audit • Acquire the skills of promoting and working in CSR programmes	• Gain knowledge about Corporate Social Responsibility • Understand the functions and activities of Social Audit • Acquire the skills of promoting and working in CSR programmes	Global
21	HOTEL FRONT OFFICE MANAGEMENT	MSW315B	• To enhance the employability skill and knowledge of students on hotel management. • To facilitate students to understand the functions of front office • To enable student with right skill for front office management.	• Enhanced employability skill and knowledge of students on hotel management. • Facilitated students to understand the functions of front office • Enabled student with right skill for front office management.	Global

22	DISASTER MANAGEMENT	MSW315C	• To understand the dynamic factors of disasters and their impact at an individual and societal level. • Deal with disaster preparedness, crisis management, risk reduction and rehabilitation and understand how they are connected. • Identify the role of different agencies in Disaster Management.	• Understand the dynamic factors of disasters and their impact at an individual and societal level. • Deal with disaster preparedness, crisis management, risk reduction and rehabilitation and understand how they are connected. • Identify the role of different agencies in Disaster Management.	Global
23	CONCURRENT FIELD WORK – III	MSW317F	• To gain experience by applying the theoretical knowledge in the field • Understand the functions and activities of field placement organization • Acquire of the skills of applying the class learning into practice	• Gain experience by applying the theoretical knowledge in the field • Understand the functions and activities of field placement organization • Acquire of the skills of applying the class learning into practice	Global
24	PSYCHOMETRIC & TESTING TOOLS		• To gain knowledge about psychological assessment and purposes • Acquire skills about intelligence, aptitude and interest assessments	• Gain knowledge about psychological assessment and purposes • Acquire skills about intelligence, aptitude and interest assessments	Global

			• Explore various types of assessment in personality, emotions, health and will learn the administration of such tests • Gain assessment skills in the areas of family and career	• Explore various types of assessment in personality, emotions, health and will learn the administration of such tests • Gain assessment skills in the areas of family and career	
25	HUMAN RIGHTS AND SOCIAL LEGISLATION	MSW411T	• To gain knowledge about human rights and social legislations • Understand the different social legislations • Acquire the skills of applying the human rights and social legislation	• Gain knowledge about human rights and social legislations • Understand the different social legislations • Acquire the skills of applying the human rights and social legislation	Global
26	DEVELOPMENT STRATEGIES	MSW412A	• To gain knowledge about development strategies • Understand the functions and activities of different developmental strategies • Acquire the skills of using the developmental strategies in different sectors	• Gain knowledge about development strategies • Understand the functions and activities of different developmental strategies • Acquire the skills of using the developmental strategies in different sectors	Global

27	ORGANISATIONAL BEHAVIOUR	MSW412B	• To gain knowledge about organizational behaviour • Understand the functions and activities of organizational behavior • Acquire the skills of working with organized sectors and human resources	• Gain knowledge about organizational behaviour • Understand the functions and activities of organizational behavior • Acquire the skills of working with organized sectors and human resources	Global
28	PROJECT MONITORING AND EVALUATION (Main Elective-3)	MSW414A	• To gain the knowledge about monitoring and evaluation systems and their use in project cycle management • Learn methods and skills to carry out monitoring using logframe matrix • Knowledge to plan and carry out evaluation studies and measure the results of the project	• Knowledge about monitoring and evaluation systems and their use in project cycle management • Learn methods and skills to carry out monitoring using logframe matrix • Knowledge to plan and carry out evaluation studies and measure the results of the project	Global
29	SKILL MATRIX AND COMPETENCY MAPPING (Main Elective -3)	MSW414B	• To gain the knowledge on skill matrix and competency mapping • To gain the ability to apply it in the context of the organizational development	• Gained the knowledge on skill matrix and competency mapping • Gained the ability to apply it in the context of the organizational development	Global

30	ENVIRONMENT AL SOCIAL WORK (Main Elective 4)	MSW415A	• To help the students to learn basic facts about Ecology, Environment and Energy resources. • To increase the knowledge on various issues on Environment and the roles of Movements for the Environment Protection. • To provide an understanding roles and responsibilities of Social Workers to protect the nature.	• Helped the students to learn basic facts about Ecology, Environment and Energy resources. • To increase the knowledge on various issues on Environment and the roles of Movements for the Environment Protection. To provide an understanding roles and responsibilities of Social Workers to protect the nature.	Global
31	PERFORMANCE MANAGEMENT (Main Elective-4)	MSW415B	• To help the students to learn basic facts about performance management and performance plan. To increase the knowledge on the importance of feedback in improving performance. To provide an understanding of the role of employee's performance appraisals.	• Helped the students to learn basic facts about performance management and performance plan. To increase the knowledge on the importance of feedback in improving performance. To provide an understanding of the role of employee's performance appraisals.	Global

32	SOCIAL ENTREPRENEUR SHIP (Main Elective-4)	MSW415C	• To gain knowledge about Social Entrepreneurship To understand and acquire the skills for entrepreneurship Acquire the skills of applying the skills to run a successful entrepreneurship	• Gain knowledge about Social Entrepreneurship To understand and acquire the skills for entrepreneurship Acquire the skills of applying the skills to run a successful entrepreneurship	Global

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Accredited by NAAC (4th Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Name of the Programme: BBA

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	FUNDAMENTALS OF MANAGEMENT	B108	• The objective of this course is to expose the students to the theories of management, organizational theory, and the practice of management in contemporary organizations from a conceptual, analytical and pragmatic perspective. • Acquire the knowledge of Functional Management • To learn about the managerial idea in the field of Management	• The students should be able to apply the concepts of management to various kinds of organizations • Learn the concepts and formulate the planning • Relate and assess the knowledge of Organization and & Staffing • Outline the importance of effectiveness of directing & coordination • Analyze the importance, process & types of controlling • Demonstrate and apply the elements of management	**Global developmental needs**
2	ACCOUNTING FOR MANAGERS	B208	• To Provide an in depth understanding of the Accounting Principles • To learn fundamental aspects of accounting	• The students should be able to apply all accounting concepts in various real-life situations. • To acquire and evaluate the accounting knowledge from Journal	**Global developmental needs**

			To develop the financial management skills and to become a finance manager in future	to Final accounts • To formulate the latest updates on financial knowledge and practice • Categorize the accounting skills in rectification of errors • Students also learn how to prepare financial statements and relate with single and double entry system Decide and build the procedures and principles of accounting	
3	BUSINESS CORRESPONDENCE	B209	• Understand the critical and important role of Business Letters • Imbibe meaning of Business Communication and the general principles of communicati006Fn. • Identify different types of organizational communications. Learn the mechanical structure of letters and drafting of others forms of communications.	• Knowledge about Trade Communication and choose the types of letters • Understand and classify the different Trade letters • Build Export and Import Letters • Interpret and develop the Letters of application by the students • Understand and compare the mechanism of writing reports Formulate and Evaluate the different Letters and applications	**Global Developmental needs**
4	HUMAN RESOURCE MANAGEMENT	B319	• This subject provides the platform to the students of management to appreciate the critical managerial functions, processes and tasks of HRM in an organization.	• To Find out the basic knowledge in the areas of Human Resource Management • Construct and examine the career planning process • To Evaluate the Methods of Job Evaluation and How Wages and	

			• To appreciate the methods and mechanics to bring out the best in people directing their energies towards corporate goals with personal satisfaction. To impart knowledge in Human resource planning and Development	Incentives are implemented in the organizations • To Illustrate about the performance appraisal, grievance redress measures etc. • Ensure and construct the human resources at International Level To Learn and create the basic ideas of Human Resource Management	
5	PRINCIPLES OF MARKETING	B320	• To understand the conceptual foundations of Marketing Management as a functional area of business. • To understand the application of marketing concepts in making strategic decisions • Students gain better understanding of modern approaches in marketing To identify the concepts of marketing research	• Students gain knowledge and interpret the basic concepts of marketing • Familiarize with marketing mix and build the awareness of buyer's behavior becomes better among students • To understand what is product and price and it develop skills to analyze, decide the various products and methods of pricing • Outline the concepts of Branding and Promotion • To demonstrate and categorize the various distribution channels, channel partners and services offered by middlemen Students develop analytical skills to tackle the challenges and latest development in Marketing Management	

6	ECONOMICS FOR MANAGEMENT	B322	• This course is intended to provide a basic foundation on the principles of managerial economics & to demonstrate the application of economic theory to business decisions. • Knowing the role & responsibilities of Managerial Economists. • Import the knowledge of forecasting. • Application of cost control & cost reduction.	• Analyze and apply the basic economic concepts • Analyze market demand and appraise the supply patterns through forecasting • Compare the different categorize of market structure • To adapt the price and output decisions in the market • Acquire and appraise the knowledge of Business Cycle and Identify the concept and methods of National Income • The students will be in a position to examine the importance of economics in the current business scenario	**Global developmental needs**
7	RESEARCH METHODS	B422	• To understand the concept of research and to have an insight on mode of doing research • Students can integrate the research concepts and tools to make the managerial decision problems Students can get adequate theoretical and practical background of Business research	• Outline the basic concepts of research • Appraise the sampling design • Examine the different measurements and scaling techniques in research • Construct the methods of data collection and data analysis • Recall and demonstrate the techniques of Interpretation and Report writing Students can get examine and estimate the theoretical and practical background of business research	**Global developmental needs**
8	ORGANIZATIONAL BEHAVIOUR	B426	• This course will enable students to describe specific	• To identify and choose the fundamental concepts of	**Global developmental**

			theories related to Perception, Group and Organizational Change. • Students can demonstrate effective team work behaviors. It will help them evaluate methods of motivating and rewarding individuals and group and integrate individual, group and organizational level concepts	Organization Behaviour • Construct and decide the Perception and Attitude of Human Behaviour • To relate and compare groups and construct their development by motivation and power • Discover and create effective leaders to manage the stress • Recall and learn the fundamentals of organization and climate After the completion of this course the student shall be able to determine the nature, scope, importance of Organizational Behaviour	**needs**
9	EXPORT MANAGEMENT	B520	• To make the students well aware about the formalities associated with export trade. • To make the students aware of the external environmental factors having a bearing on the export trade.	• To identify and aware the basic concepts of export stimulation • To relate and knowing the price system and payment terms in export transactions • To construct the promotion for products to export • Discover and create the awareness of export policy • Recall and knowing the Export documents • Assess the various Export Procedures and quality issues	**Global developmental needs**
10	BUSINESS ENVIRONMENT	B521	• Provide an understanding of the role of business in society. • To relate the Impact of	• To appraise and Recall the basic concepts of Business and its environment • To Interpret and Construct the	**Global developmental needs**

			Environment on Business in an integrative manner	economics systems • Develop and Discuss about MRTP Act • Recall and identify the Macro Economic Parameters • Examine the Five Year Plans • To construct and Compile the overall Factors of Business Environment	
11	SUBJECT SKILL - I: PAPER - I: SALES & DISTRIBUTION MANAGEMENT	B523A	• The purpose of this paper is to acquaint the student with the concepts which are helpful in developing a sound sales and distribution policy and in organising and managing sales force and marketing channels.	• Relate and Translate the Nature and Scope of Sales Management • Identify and Examine the role of Sales Personal • Evaluate the Sales Programme • Originate the different channels • Summarize and discuss the Channel information systems • Imagine the role of Sales Personnel	**Global developmental needs**
12	ELECTIVE PAPER - II: PAPER - V: LOGISTICS & SUPPLY CHAIN MANAGEMENT	B626B	• To understand the role of logistic and supply chain management in the modern society • To make the students understand the uniqueness of logistic and supply chain management	• To adapt the basic logistics management to the students • To Evaluate the basic logistic network and resources • Choose the basic logistic demand and forecasting • Interpret the models of supply chain management • Organize the supply chain management strategy • Extend the supply chain management to ERP	**Global developmental needs**
13	SUBJECT SKILL -II: PAPER - V:	B627A	• To understand the role of financial institutions and	• Infer the basic Indian Financial System	**Global developmental**

	FINANCIAL SERVICES		Stock exchanges •	• Construct the concept NBFI • Decide the role of financial institutions in Financial Markets • Examine the Functions of NSE • Organize to invest the money into financial institutions • List out the basic inputs of financial systems	**needs**
14	SUBJECT SKILL - II: PAPER - VII: BUSINESS TO BUSINESS MARKETING	B627C	• The Course attempts to expose the various concepts of Industrial marketing to students who have had a foundation course in marketing	• Construct the concept of Industrial Marketing • Compare the Segmentation of Marketing • Illustrate the Product Management Concept • List out the methods of Pricing • Organize and Examine the Marketing Strategy • Determine the various Levels of B2B marketing	**Global developmental needs**
15	SUBJECT SKILL - II: PAPER - VIII: CORPORATE SOCIAL RESPONSIBILITY	B627D	• The Course attempts to expose the various concepts of Ethics and CSR activities	• To know about the various events of CSR • To understand and Infer the techniques and competencies required to plan for events • To Identify the Consumer Protection Issues • To Determine and Demonstrate the Eco System • Construct the Role of Government • Deduct the basic inputs of CSR	**Global developmental needs**

| 16 | NON MAJOR ELECTIVE: PAPER - II: ORGANIZATIONAL BEHAVIOUR | NBB604 | • To establish knowledge in the areas of Personality, Perception and attitudes. | • To identify and choose the fundamental concepts of Organization Behaviour
• Construct and decide the Perception and Attitude of Human Behaviour
• To relate and compare groups and construct their development by motivation and power
• Discover and create effective leaders to manage the stress
• Recall and learn the fundamentals of organization and climate
• After the completion of this course the student shall be able to determine the nature, scope, importance of Organizational Behaviour | **Global developmental needs** |

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Name of the Programme: MBA

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1.	Export and Import Management	MBA331T	• To familiarize students with policy, procedures and documentation relating to foreign trade operations. • To enable the students to gain the knowledge and apply it in the respective business which can be helpful to them at future.	• Helps in learning the Cross-cultural export and import management for successful operations. • Students learn to handle the export-import business.	Global
2.	Digital Marketing	MBA332A	• To learn the essentials of digital marketing in exploring content and connecting with customers. • The course aims to acquaint students with the process of marketing through Internet, Social Media and Mobile Marketing	• The student will be able to evaluate the risks involved in digital marketing. • The strategies discussed will help students to attract and retain the online customers.	Global
3.	Counseling Skills for Managers	MBA332D	• To develop basic skills among students to independently handle a wide range of employee counseling and performance counseling.	• Updating the current systems and practices of managing work force.	Global

			• To make them understand the uses counseling employees.	• Provides knowledge for the dealing with the issues relating to management of workforce	
4.	Strategic Investment and Finance Decisions	MBA334B	• To train students on how to assess the employee decision making necessary at higher levels of Investment and financial Management. • To develop the analytical skill for the students and influence it in their job field.	• Helps to induce the student's knowledge in application oriented. • The course manipulates the concepts in practical way.	Global
5.	Logistics Management	MBA334C	• To introduce process and functions of logistics system and to understand the major building blocks, functions, business process, performance metrics and decision making in supply chain network. • To provide an insight into the role of Internet Technologies in Logistics Management and to learn the need and importance of logistics in product flow	• To enable an efficient method of moving products with optimization of time and cost. • Enables the students to gain knowledge of risks associated in Logistics management.	Global
6.	International Trade Finance	MBA335B	• To understand the international markets for payments and credit. • To understand the evaluation of international investments.	• Enable the students to gain the knowledge and apply where it is to be influenced. • Helps to know the practices of international trade finance.	Global
7.	Strategic Management	MBA430T	• To impart to the students the basic concepts of Strategic Management process. • To focus on how firms formulate, implement and evaluate corporate business strategies and to learn to use various tools.	• Students will be able to know basic concept of strategic management process, the way corporate business strategies are formulated, implemented and evaluated. • Students come to know the various strategic tools included in the process	Global

8.	International Business Management	MBA431T	• To introduce students to the world of global business and to expose them to the realities of doing business internationally. • To familiarize students with the competitiveness of global industry and the various theoretical frameworks available.	• Students will come to know about the world of global business, the competitions that they ought to face and the various theoretical frame works that are available. • Develops an appreciation of business issues and their influence on International business decision making.	Global
9.	Logistics for Health Care Services	MBA432E	• To understand the processes and details related to Inventory Control and Purchase Management (ICPM) in Healthcare Industry. • To examine the strategic function of logistics Management in the Modern Corporation.	• Provides learning the supply chain management in hospitals. • Creates awareness among the students with basic concepts of logistics for health care services.	Global
10.	Information Technology in Supply Chain Management	MBA433C	• To appreciate the role of IT in supply chain. • To understand data mining in supply chain and to analyze IT practices in supply chain.	• Create capability to analyze, design and improve the supply chain in an organization. • It provides an opportunity for managers to plan, analyze and design information system solutions for various functionalities of the organization	Global
11.	Risk and Disaster Management	MBA433E	• To familiarize the students and to identify the areas of safety and risk and managing of the same. • To acquaint the students with the basic concepts of risk in hospitals towards service assurance.	• Enhance students in learning the hospital administrators in the area of disaster and safety management. • The course provides students with an understanding of quality and patient safety	Global
12.	Consumer Behavior	MBA434A	• To understand the importance of consumer behavior in Marketing, its models and types. • To equip the students with various intrapersonal and interpersonal determinants of consumer behavior.	• The student will understand the influences on customer choice and the process of human decision making in a marketing context. • To understand the consumer behaviour in making marketing	Global

				plans.	
13.	Security Analysis and Portfolio Management	MBA434B	• To understand the techniques of diversifying the risk in financial investments. • To have a reasonable knowledge of Indian capital market operations and investment opportunities.	• Helps to gain the knowledge and apply it in practically in the organization. • Students get exposure and use it in business at future.	Global
14.	Management of Hospital Services	MBA434E	• To enable the students gain insights into various aspects like importance, functions, policies and procedures, equipping, controlling, co-ordination, communication, staffing, reporting and documentation of both clinical and non-clinical services in a hospital • To introduce the management concepts and principles of hospital services	• Students are expected to develop the ability to understand and manage hospital services. • Evaluation of various decisions of the hospital services.	Global
15.	Services Marketing	MBA435A	• To make the students understand the uniqueness of services marketing • To identify and analyze the various components of the services mix.	• Students are expected to develop the ability to understand and manage hospital services. • Evaluation of various decisions of the hospital services.	Global

			Course Objective	Course Outcome	
16.	MERGERS AND ACQUISITIONS	MBA435B	• To enable student to understand regulatory framework for mergers and acquisitions. • To know and observe the process involved in mergers and acquisitions and the available takeover defenses.	• Student will be equipped with the nuances involved in mergers and acquisition process and the techniques required handling post-merger. • It will be enable them to obtain the knowledge and apply wherever it is required. •	**Global developmental needs**
17.	Total Productivity Management	MBA435C	• To make the students conversant with the tools of TPM which would be useful in coordinating the activities of productivity system by proper models and improvement techniques.	• To know the concept of productivity and its models • To analyze organizational performance	Global
18.	Training for Effective Performance	MBA435D	• To make the students understand the concept of training, its need and importance. • To enable the students to cope up with the learning process and the training need assessment.	• Development of managerial outlook on the subject. • Brings out the importance of training and development in organization.	Global
19.	HOSPITAL WASTE MANAGEMENT	MBA435E	• To familiarize the learner with the importance, techniques and the procedures involved in the management of Hospital Waste. • To identify key sources, typical quantities generated, composition, and properties of solid and hazardous wastes.	• Students' learn to manage biomedical waste and to prevent a general exposure to harmful effects. • To familiarize the students with basic concepts of Hospital waste management	**Global developmental needs**

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Name of the Programme : BA Tamil

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	சிறுகதையும் புதினமும்	TA107	சிறுகதை, புதினம் ஆகிய இலக்கிய வகைமைகளின் வரலாற்று அறிவைப் பெறுதல் நூறு ஆண்டுகாலத்தில் தமிழகச் சிறுகதைகளில் ஏற்பட்டுள்ள கதையாடல் வளர்ச்சி, கருத்தியல் வளர்ச்சி ஆகிய அறிவையும் சிறுகதைகளை வாசிக்கும் அறிவையும் திறனையும் பெறுதல்	இந்தியச் சிறுகதைகளின் தன்மைசார் அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல். மேலும் மொழி, நிலம், பண்பாடு சார்ந்து சிறுகதைகளை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல். புதின எழுத்துமுறை அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல்.	global

				தன்வரலாற்றுப் புதின எழுத்துமுறை அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல்.	
2	செம்மையாக்க மும் தொகுத்தலும்	**TA109**	நீண்ட வாக்கியங்களாக இருப்பவற்றில் ஏற்படும் குழப்பத்தைப் போக்குவதற்கு நிறுத்தற்குறிகள் பற்றிய வரலாற்று அறிவைப் பெறுதல். சொற்களைப் பிரித்து எழுதும்போது சேர்த்து எழுதும்போது அதற்கான பொருளில் மாற்றம் ஏற்படும் என்பதால் அவற்றில் கவன செலுத்துதல். மொழியின் இன்றியமையை அறிந்து கொள்ளுதல். சொற்களின் புணர்ச்சிவிதிகளைத் தெரிந்து கொள்வது பொருளில் ஏற்படும் மாற்றங்களை புரிந்து கொள்வதற்கும் சந்திபிழைகள் வராமல் எழுதுவதற்குமான அறிவைப்	சொற்களை அடிப்படையாகக்கொண்ட ஒரு வாக்கியத்தை அமைக்கும்போது அதில் இடம்பெறக் கூடிய சொற்களைக் குறித்தும் பொருள் குறித்தும் அறிந்து கவனமாக கையாள்வது என்பது அவசியம். அதற்காக மொழிபெயர்ப்பு வேலையும் நடக்கும் என்பதால் சொல்தேர்வு, பொருள் தெளிவு, மொழிபெயர்ப்பு குறித்த அறிவையும் வாசிப்புத் திறனையும் பெறுதல். ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல். உரைநடை இலக்கியத்தில் கடைபிடிக்கக்கூடிய மிக முக்கிய ஒன்று அடிகுறிப்பும் துணைநூற்பட்டியல் இடுவது.	**global**

			பெறுதல். மொழியின் இன்றியமையை அறிந்து கொள்ளுதல் எழுதும் மற்றும் வாசிக்கும் அறிவையும் திறனையும் பெறுதல்	இவை கருத்து திருட்டைக் குறைப்பதற்கான வழியாகும். அந்தவகையில் எழுத்துமுறை அறிவையும் வாசிப்புத் திறனையும் அதிகப்படுத்துதல். நூல் வடிவமைப்பிற்கான அறிவைப் பெறுதல்.	
3	கவிதை, நாடகம், உரைநடை	**TA207**	கவிதை, நாடகம், உரைநடை ஆகிய இலக்கிய வகைமைகளின் வரலாற்று அறிவைப் பெறுதல். நூறு ஆண்டுகாலத்தில் தமிழகச் கவிதைகளில் ஏற்பட்டுள்ள வளர்ச்சி, கருத்தியல் வளர்ச்சி ஆகிய அறிவையும் கவிதைகளை வாசிக்கும் அறிவையும் திறனையும் பெறுதல்	தமிழ்க் கவிதைகளின் தன்மைசார் அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல். மேலும் மொழி, நிலம், பண்பாடு, பாலினம் சார்ந்து கவிதைகளை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல். கவிதைகளை எழுதும் மற்றும் வாசிக்கும் அறிவையும் திறனையும் பெறுதல் நாடகம் எழுத்துமுறை அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல். மொழி, நிலம், பண்பாடு, பாலினம் சார்ந்து நாடகங்களை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு	**global**

				அறிவையும் பெறுதல். உரைநடை எழுத்துமுறை அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல்.	
4	சமயப் பாடல்களும் சிற்றிலக்கியங்க ளும்	TA1023	தமிழின் வளமான சமய இலக்கிய மரபை அறிமுகப்படுத்துதல் - பல்சமய நோக்கு, செல்நெறி ஆகியவற்றைப் புரிந்துணர உதவுதல் - சிற்றிலக்கிய மரபை அறிமுகப்படுத்துதல் - சிற்றிலக்கியங்களின் பன்மைத்துவத்தை அறிமுகம் செய்தல்.	மொழித்துறை மாணவர்களுக்குப் சிற்றிலக்கிய மற்றும். பக்தி இலக்கியம் புலமை தேவை என்பதை அறிந்து கொள்வர். சமயம் சார்ந்த செய்திகளை பக்தி வாயிலாக அறிந்து கொள்வர். சிற்றிலக்கியத்தின் மரபை அறிந்து கொள்வர். பக்தி இலக்கியத்தின் வாயிலாக சொல்வளங்களை கையாளுகின்ற வளங்களை பெறுவர். சிற்றிலக்கியங்கள் மூலம் மக்களின் வீரம் மற்றும் வாழக்கை முறை மற்றும் நாட்டின் வளம் போன்ற செய்திகளை அறிந்தனர் சமய கொள்கைகளை	**global**

5	காப்பியங்கள்	TA410	தமிழ் மொழியில் உள்ள காப்பியங்கள் குறித்தும் அவற்றின் உறவுகள் குறித்தும் அறிந்துகொள்வது. அவற்றின் வழியாக அக்கால மக்களின் சமூக அரசியல் பொருளாதார பின்புலம் முதலியன குறித்து அறிந்துகொள்வது.	விளங்கிக் கொள்வர். சிற்றிலக்கிய நுட்பங்களை உணர்ந்து கொண்டு சிறந்த சிற்றிலக்கியங்கள் படைகின்ற திறன்களைப் பெற்றிருப்பர்.	
				தமிழின் காப்பிய இலக்கணம் குறித்து அறிந்துகொள்ளுதல் மற்றும் முதல் காப்பியமான சிலப்பதிகாரம் குறித்து அறிந்துகொள்வர். மணிமேகலை மற்றும் சீவகச்சிந்தாமணி காப்பிய அறிமுகம் மற்றும் சமண பௌத்த சமயங்கள் பற்றிய அறிந்துகொள்வர். பெரியபுராணம் மற்றும் சைவ சமயம் குறித்த அடிப்படைச் செய்திகளை அறிந்துகொள்வர். கம்பராமாயணம் அறிமுகம் மற்றும் வைணவச் சமயம் குறித்த அடிப்படைச் செய்திகளை அறிந்துகொள்வர். இரட்சணிய யாத்திரிகம்,	global

				சீறாப்புராணம் அறிமுகம் மற்றும் கிருத்துவ, இசுலாம் சமயங்கள் குறித்த அடிப்படைச் செய்திகளை அறிந்துகொள்வர்.	
6	இலக்கியம் 5 : அற இலக்கியங்கள்	**TA501**	தமிழ் அற இலக்கியங்களின் காலம், நோக்கம், வளர்ச்சிநிலை சமூகக் கட்டமைப்பு போன்றவற்றை அறிந்து கொள்ளல்.	தமிழின் அற இலக்கிய மரபை அறிந்துகொள்ளுதல்.	**global**
7	இலக்கியத் திறனாய்வு	**TA504**	திணைக் கோட்பாடுகள் தொடங்கிக் காலத்திற்கேற்றவாறு புதிய கோட்பாடுகள் அறிமுகமாகின்றன. அவற்றை மாணவர்கள் அறிந்து கொள்ள வேண்டும். பண்டையத் தமிழ் இலக்கியங்களிலிருந்து சமகாலம் வரையிலான இலக்கியங்களைக் கோட்பாடுகளின் வழி வாசிக்க முற்படுகிற போது புதிய வெளிச்சங்களைக் கண்டடைய முடியும் என்ற	இலக்கியங்களில் இடம்பெற்றுள்ள பண்பாட்டுக் கூறுகளையும் சமூக ஏற்றத்தாழ்வுகளையும் திறனாய்வு மூலம் அறிந்துகொள்ளுதல்.	**global**

			தெளிவை மாணவர்கள் உணரும் நோக்கில் இப்பாடம் உருவாக்கப்பட்டுள்ளது.		
8	இலக்கியம் 6 : சங்க இலக்கியம் (அகம் – புறம்)	TA601	தமிழின் திணை மரபை அறிமுகப்படுத்துதல் - அகத்திணை, புறத்திணை இலக்கியங்களை அறிமுகப்படுத்துதல்.	தமிழின் திணை மரபை அறிதல் - அகத்திணை, புறத்திணை இலக்கியங்களை அறிதல்.	**global**
9	திராவிட மொழிகளின் ஒப்பிலக்கணம்	TA603	திராவிட மொழிகள் – இயல்புகள் – ஒருங்கிணைப்பு ஆகியவற்றை அறிமுகப்படுத்துதல்.	திராவிட மொழிகளைப் பற்றி அறிதல்.	**global**
10	அச்சு ஊடகம்	TA604	அச்சு ஊடகத்தின் வருகை – பயன் – இன்றியமையாமை – தமிழில் இதழியல் வரலாறும் வளர்ச்சியும் ஆகியவற்றை அறிமுகப்படுத்துதல்.	தமிழ் இதழியல் வரலாற்றை அறிதலின் வாயிலாக ஊடகத்தின் வலிமையை உணர்தல்.	**global**

| 11 | விருப்பப்பாடம் 1 : கிறித்துவத் தமிழ் இலக்கியம் | **TA605** | மேனாட்டுக் கிறித்துவர்கள் தமிழ்நாட்டுக் கிறித்துவர்கள் – அறிமுகப்படுத்திய இலக்கிய வகைகள், தமிழ்மொழி சீர்திருத்தம், தமிழ்மொழி சிறப்புகளை உலகறியச் செய்தமை போன்றவற்றை அறிந்துகொள்ளல். | கிறித்துவர்கள் தமிழுக்கு ஆற்றிய தொண்டினை அறிதல். | **global** |

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Name of the Program : MA Tamil

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	**கவிதை, சிறுகதை**	**TA720**	கவிதை சிறுகதை ஆகிய இலக்கிய வகைமைகளின் வரலாற்று அறிவைப் பெறுதல். நூறு ஆண்டுகாலத்தில் தமிழகப் புதுக்கவிதைகளில் ஏற்பட்டுள்ள வளர்ச்சி, கருத்தியல் வளர்ச்சி ஆகிய அறிவையும் கவிதைகளை எழுதும் மற்றும் வாசிக்கும் அறிவையும் திறனையும் பெறுதல். மேலும் மொழி, நிலம், பண்பாடு, பாலினம் சார்ந்து சிறுகதைகளை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல்.	தமிழ்ச் சிறுகதைகளின் தன்மைசார் அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல். மேலும் மொழி நிலம், பண்பாடு, பாலினம் சார்ந்து சிறுகதைகளை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல். சிறுகதைகளை எழுதும் மற்றும் வாசிக்கும் அறிவையும் திறனையும் பெறுதல் இந்திய மற்றும் உலகச் சிறுகதைகளின் தன்மைசார் அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல். மேலும் மொழி நிலம், பண்பாடு, பாலினம் சார்ந்து சிறுகதைகளை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல். சிறுகதைகளை எழுதும் மற்றும் வாசிக்கும்	**global**

				அறிவையும் திறனையும் பெறுதல். கவிதை சிறுகதைகளைத் திறனாய்வு செய்யும் அறிவினையும் வாசிப்புத் திறனையும் பெறுதல். இலக்கியத்திற்குள் செயல்படும் மொழி உளவியல் முதலான பல்வேறு கோட்பாட்டு அறிவினைக் கொண்டு இலக்கியத்தை அணுகும் முறை குறித்தும்	
2	**இக்கால மொழியியல்**	**TA721**	தமிழ் மொழியில் ஏற்பட்டுவரும் மொழிமாற்றங்கள் குறித்தும் குறித்தும் அறிந்துகொள்வது. அவற்றின் வழியாக அக்கால மக்களின் பண்பட்டு விழுமியங்கள் குறித்து அறிந்துகொள்வது. தற்கால அறிவியல் தேவைக்கு ஏற்ப தமிழ் மொழிவளர்ச்சிக்கான சாத்திய கூறுகள் குறித்து ஆரய்வது.	மொழியியல் வரலாறு - மொழியியல் வகைகள் - ஒலியியல் ஒளி நெடுங்கணக்கு - ஒலியியற் கழகம் ஒலியுறுப்புகள் குறித்து அறிந்துகொள்வர். ஒலி வகைகள் - உயிரொலிகள் - மெய்யொலிகள் – ஒலிப்பு முறைகள் - ஓசை இயல்புகள் பற்றி அறிந்துகொள்வர்.	**global**

				ஒலியனியல் - ஒலியன் - மாற்றொலி - துணைநிலை வழக்கு வேற்றுநிலை வழக்கு குறித்த சொய்திகளை அறிந்துகொள்வர். உருபனியல் - உருபு - உருபன் - மாற்றுருபு உருபனைக் கண்டறியும் நைடான் விதிகள் குறித்த சொய்திகளை அறிந்துகொள்வர். உருபங்களின் வகையும் வருகையும் தொடரனியல் அறிமுகம் - அண்மை உறுப்புக் கோட்பாடு - மூவகைத் தொடரனியல் குறித்த சொய்திகளை அறிந்துகொள்வர்.	
3	காப்பியங்கள்	TA820	**தமிழ் மொழியில் உள்ள காப்பியங்கள் குறித்தும் அவற்றின் உறவுகள் குறித்தும் அறிந்துகொள்வது. அவற்றின் வழியாக அக்கால மக்களின் சமூக அரசியல் பொருளாதார பின்புலம் முதலியன குறித்து அறிந்துகொள்வது.**	தமிழின் காப்பிய இலக்கணம் குறித்து அறிந்துகொள்ளுதல் மற்றும் முதல் காப்பியமான சிலப்பதிகாரம் குறித்து அறிந்துகொள்வர். மணிமேகலை மற்றும் சீவகச்சிந்தாமணி காப்பிய அறிமுகம் மற்றும் சமண பௌத்த சமயங்கள் பற்றிய அறிந்துகொள்வர்.	global

				நீலகேசி மற்றும் பெருங்கதை குறித்த செய்திகளை அறிந்துகொள்வர். கம்பராமாயணம்இ வில்லிபாரதம் அறிமுகம் மற்றும் வைணவச் சமயம் குறித்த செய்திகளை அறிந்துகொள்வர். இரட்சணிய யாத்திரிகம்இ தேம்பாவணி அறிமுகம் மற்றும் கிருத்துவஇ இசுலாம் சமயங்கள் குறித்த செய்திகளை அறிந்துகொள்வர்.	
4	புதினம் ரூ உரைநடை	TA821	உரைநடை எழுதும் கலையினை அறிந்து கொள்வர் படைப்பிலக்கியத்தின் மீதான ஆர்வத்தையும் வாசிப்பையும் வளர்த்துக் கொள்வர் தொடர் வாசிப்பின் மூலம் சமூகப் பிரச்சனைகளுக்குத் தீர்வு காணும் ஆற்றல் பெறுவர்	உரைநடை எழுதும் கலையினை அறிந்து கொள்வர் படைப்பிலக்கியத்தின் மீதான ஆர்வத்தையும் வாசிப்பையும் வளர்த்துக் கொள்வர் தொடர் வாசிப்பின் மூலம் சமூகப் பிரச்சனைகளுக்குத் தீர்வு காணும் ஆற்றல் பெறுவர் அரசியல் இ சமூகம் சார்ந்த சமீப கால மாற்றங்களை புரிந்து கொள்வர்	global

			அரசியல் இ சமூகம் சார்ந்த சமீப கால மாற்றங்களை புரிந்து கொள்வர்	புதினங்களின் வரலாறு குறித்தும் இ வளர்ச்சி குறித்தும் அறிந்து கொள்வர். புதினங்களை வடிவமைக்கும் திறனைப் பெறுவர். புதினம் சார்ந்த ஆய்வுகளை மேற்கொள்ளும் திறன் பெறுவர்.	
5	இலக்கியக் கோட்பாடுகள்	TA822	இலக்கியக் கோட்பாடு – இலக்கியத் திறனாய்வு – இலக்கிய வரலாறு – இலக்கியம் ஆகியவற்றின் தனித்தன்மைகளையும் உறவுநிலைகளையும் குறித்த அறிவைப் பெறுதல் மொழியியல் இ ஒப்பியல் இ சமூகவியல் இ பெண்ணியியல் இ தலித்தியல் ஆகிய திறனாய்வு முறைகளின் அறிவைப் பெறுதல்	உளப்பகுப்பாய்வியல் இ தொன்மவியல் இ அமைப்பியல் இ பின் அமைப்பியல் ஆகிய திறனாய்வு முறைகளின் அறிவைப் பெறுதல் பின் நவீனத்துவம் இ பின் காலனித்துவம் இ எடுத்துரைப்பியல் இ புலம்பெயர் இலக்கியத் திறனாய்வு இ சூழலியல் ஆகிய திறனாய்வு முறைகளின் அறிவைப் பெறுதல் ஆய்வு மாதிரிகள் குறித்த அறிவையும் பயிற்சியும் பெறுதல்	**global**

| 6 | பக்தியிலக்கியங்க ளும் மெய்யியல் மரபும் | TA1020 | பக்தியிலக்கியங்களின் வழி மொழித்துறை மாணவர்களுக்குப் பிற சமய அறிவு தேவை என்பதை அறிந்து கொள்வர். உலகமயமாக்கச் சூழலில் பக்தியிலக்கியத்தின் அறச்செய்திகளின் முதன்மை குறித்து அறிய மொழியறிவு அடிப்படைத் தேவை என்பதை அறிந்து கொள்வர். மெய்யியல்மரபின் வாயிலாக பல்வேறு சமயங்களின் அடிப்படைக் கட்டமைப்பினை அறிந்து கொள்வர். | பக்தியிலக்கியத்தின் முழுமையைப் புரிந்து கொள்வதன் நிரைவாக பேச்சாளர் என்ற தன்னம்பிக்கையினைப் பெறுவர். சமயம்சார்ந்த புத்தகங்கள் எழுதுவதற்கும் ஆராய்ச்சிக் கட்டுரைகள் நெறிப்படுத்துவதற்கும் கருத்தரங்கம் நடத்துவதற்குமான உந்துதலைப் பெறுவர். சமயநெறிமுறைக் கொள்கைகளை விளங்கிக் கொள்வர். சமய நெறிமுறையின் நுட்பங்களை உணர்ந்துகொண்டு சிறந்த ஆராய்ச்சியினைச் செய்கின்ற திறன்களைப் பெற்றிருப்பர். | **global** |
| 7 | ஒப்பிலக்கியம் | TA1021 | ஒப்பிலக்கியக் கோட்பாடுகளையும் பயன்பாடுகளையும் அறிந்துகொள்ளல்- தமிழ்நாடு,இந்திய,உலக அளவிலான இலக்கியங்களுக்கிடையிலா ன உறவுகளை எடுத்துரைத்தல்.தமிழுக்கும் பிற இலக்கியங்களுக்குமான பொது,சிறப்புக்கூறுகளை எடுத்துரைத்தல். | ஒப்பிலக்கியத்திற்கான அறிமுகம் மற்றும் இலக்கிய வகைமைகளுக்கான பொதுக்கூறுகள்,சிறப்புக்கூறு கள்,அவற்றிற்கான பயன்பாடுகள் குறித்த அறிவைப் பெறுதல். | **global** |

				ஒப்பிலக்கியத்திற்கான தோற்றம்இவளர்ச்சி தமிழ்நாடுஇஇந்தியாஇஉலக நாடுகளின் அளவில் எங்ஙனம் என்பது குறித்த அறிவைப் பெறுதல். ஒப்பிலக்கியத்தின் மூலம் சில கோட்பாடுகளான அறிவியல் கோட்பாடுஇபிரெஞ்சு கோட்பாடுஇசமூக உளவியல் கோட்பாடுஇஅரசியல்இதாக்குர வு கோட்பாடுகள் குறித்த அறிவைப்பெறுதல்.	

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Name of the Programme: B.Sc Bio chemistry

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	CELL BIOLOGY	BC106	• To understand the structure of prokaryotic and eukaryotic cellular organization and to know the fluid mosaic model and membrane transport mechanism. • To learn about the chemical composition and functions of endoplasmic reticulum, golgi apparatus and lysosomes. • To have in-depth understanding of the Structure, Chemical composition and functions of Mitochondria and Ribosomes. • To learn the functions of peroxisomes and glyoxysomes and composition of cytoskeleton and extracellular matrix. • To acquire knowledge on nucleus structure, composition and functions of chromosomes cell cycle, cell division and cell death	• Develop an understanding of the structure of cell and its difference between prokaryotes and eukaryotes • Define and understand the fluid mosaic model and membrane transport • Categorize the chemical composition and functions of endoplasmic reticulum, golgi apparatus and lysosomes. • Broad knowledge on the structure, chemical composition and functions of mitochondria, ribosomes, peroxisomes and glyoxysomes. • Demonstrate a clear understanding of the composition of cytoskeleton and extracellular matrix. • Evaluate the mechanism of cell division with reference to mitosis and meiosis	Global developmental needs

			mechanisms.		
2	BIOMOLECULES	BC107	• To study the structure and functions of large biological macromolecules. • To understand the organic chemical principles in life processes. • To introduce the knowledge of lipid and their importance. • To provide in-depth understanding of Nucleic acids and its structure. • To categorize the source, applications of vitamins and minerals.	• Understand the knowledge of carbohydrates and their classifications in detail • Acquire the basic knowledge on the classification and structure of amino acids and classify proteins based on its physical and chemical properties • Discuss the importance, classification and functions of lipids • Enumerate the structure and properties of nucleic acids and its types • Explore and recommend the source, applications of vitamins and minerals • Compile the basic information on the sources, mechanism and applications of macro and micro elements	Global developmental needs
3	PLANT BIOCHEMISTRY	BC206	• To provide the basic knowledge of plant cell and water absorption mechanism. • To get familiar with photosynthetic mechanism and starch production cycle. • To acquire knowledge about NPK cycle and its biological significance. • To give detail idea about seed germination, primary and secondary metabolites. • To explore the information about plant hormones and their physiological effects.	• Understand the basic knowledge of plant cell and water absorption mechanism. • Acquire knowledge on photosynthetic mechanism and starch production cycle. • Discuss about NPK cycle and its biological significance. • Describe about seed germination, primary and secondary metabolites. • Explore the information about plant hormones and their physiological effects. • Assess the in-depth principle and speculate the mechanism of plant life cycle	Global developmental needs
4	HUMAN PHYSIOLOGY	BC207	• To understand the anatomy and physiology, various levels of organizations basic homeostatic	• Define and explain the anatomy and physiology, various levels of organizations basic homeostatic	Global developmental needs

				mechanism. - To elucidate and describe the composition, function of various body fluids like blood and lymph, their significance and related disorders - To explain the morphology, physiology of circulatory, respiratory and digestive system and classify the structure of lungs, transport of gases between lungs and tissues. Explain the morphology, functions of kidney and nephron and their role in urine formation. - To categorize the Structure and functions of nerve cells, conduction of nerve impulses, the role of neurotransmitters and reflex action. - To speculate the physiology of muscle contraction in co-ordination with the joints, their articulation and skin.	mechanism. - Explain and determine the composition, function of various body fluids like blood and lymph, their significance and related disorders - Explain and sketch the morphology, physiology of circulatory, respiratory and digestive system. - Categorize the structure of lungs, transport of gases between lungs and tissues. Explain the morphology, functions of kidney and nephron and their role in urine formation. - Evaluate the structure and functions of nerve cells, conduction of nerve impulses, the role of neurotransmitters and reflex action. - Speculate the physiology of muscle contraction in co-ordination with the joints, their articulation and skin.	
5	MICROBIOLOGY	BC304	• To understand basic structure of microbes and associated instruments.	• By learning this subject, Students can demonstrate knowledge of microbial cell structure and metabolism, evolutionary forces and their consequences. It obtains wide knowledge as how microorganisms interact with their environment and interaction between humans. Students can describe and use new and existing methods and technologies in and out of the laboratory setting. They can also formally communicate the results of biological investigations	Global developmental needs

				using both oral and written. Students can demonstrate an understanding, and ability to use, the scientific method including observation, hypotheses testing, data collection, analysis and interpretation.	
6	BIOPHYSICAL CHEMISTRY	BC305	• To understand about basic biophysical units and its chemistry	• On completion of this subject, a student will be able to understand the range of physical methods used to characterize the organization, properties and function of biological molecules, along with the necessitating sophisticated methods to study them at the molecular level. This course will be also providing the principle, instrumentation and application of various basic and sophisticated analytical instruments like Electrophoresis, Microscopy, Chromatography, and Spectroscopy.	Global developmental needs
7	ENZYMOLOGY	BC516	• To understand the role of enzymes in biochemical reactions and its applications.	• Student will have a strong foundation in distinguishing the fundamentals of enzyme properties, nomenclatures, characteristics and its mechanisms. They will be able to apply biochemical calculation for enzyme kinetics, Compare methods for production, purification, characterization and immobilization of enzymes, can discuss various application of enzymes that can benefit human life. It also innovate the student to discover the current and future trends of	Global developmental needs

				applying enzyme technology for the commercialization purpose of biotechnological products.	
8	INTERMEDIATORY METABOLISM	BC517	• To promote and understand chemical reactions, central metabolic pathways and kinetics of energy and homeostasis of metabolism	• At the end of this course, the student is able to explain the general design of metabolic pathways based on bioenergetic principle, can understand the structures and functions of biological molecules. Students can describe how carbohydrates (glucose and glycogen), lipids (fatty acids and triglycerides) and nitrogenous compounds (amino acids and nucleotides) are synthesized and degraded, and more importantly, how metabolic pathways are regulated and recognize the biochemical basis of diseases arise due to defects in metabolism.	Global developmental needs
9	ENDOCRINOLOGY	BC518	• To understand the role of hormones in biochemical reactions and its applications.	• Students will develop the ability to independently evaluate, treat and monitor common endocrine disorders. They will be able to describe major actions of each hormone on target cells, synthesis pathways and inactivation of certain hormones like steroid and thyroid. Student will also gain complete knowledge on hormones and the control of its synthesis and secretion site for each hormone, including feedback relationships.	Global developmental needs

10	GENETICS	BC519	• To understand basic aspects of genetics and associated laws.	• On satisfying the requirements of this course, students will have the knowledge and skills to explain the key concepts in population, evolutionary and quantitative genetics including the basis of genetic variation, heretability and mutation. A student can understand the range of molecular laboratory techniques used routinely in human forensic analysis and population genetic analysis including sex typing, DNA profiling, Single Nucleotide Polymorphism (SNP) detection and DNA sequencing.	Global developmental needs
11	MOLECULAR BIOLOGY	BC613	• To give basic aspects of molecular theories and central dogma.	• Students will be able to exhibit a knowledge base in genetics, cell and molecular biology, anatomy and physiology. Demonstrate the knowledge of common and advanced laboratory practices in cell and molecular biology. Exhibit clear and concise communication of scientific data. Engage in review of scientific literature in the areas of biomedical sciences.	Global developmental needs
12	IMMUNOLOGY	BC614	• To know about exact mechanism of action of Ag-Ab interaction.	• The study of immunology will enable the student to gain a broad foundation base and build upon that base for understanding the defense mechanisms of the human body. Such foundation will be	Global developmental needs

				germane to advanced courses for the student entering medical school or graduate school or for any student actively involved in the medical healing arts.	

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Name of the Programme: M.Sc. Bio chemistry

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	CELL DYNAMICS	BC709	• To learn the prokaryotic and eukaryotic cellular organization and acquire knowledge on cell cycle and cell division. • To understand the communication and transport across the cell membrane. • To know the histopathology techniques and staining methods. • To understand the membrane proteins and their interactions with other cellular components. • To explain the molecular basis of apoptosis and	• Acquire broad knowledge on prokaryotic and eukaryotic cellular organization, cell cycle and cell division. • Define and provide an understanding of the structure of cell and function of various subcellular organelles. • Examine the theory and practice of histological techniques and staining of tissues using routine and specialized techniques. • Learn the basic concepts on the membrane proteins and their interactions with other cellular components. • Determine the transport mechanisms across biological membranes and learn	**Global developmental needs**

			necrosis	the concept and mechanism of ATP synthesis. • Compile the information on cell aging and cell death mechanisms.	
2	BIOMOLECULES	BC710	• To understand the nature of various biomolecules present in living cells. • To get exposed to key contributions of scientists such as G.N. Ramachandran and Watson - Crick etc. in order to create scientific interest amongst students in life processes. • To learn the properties of carbohydrates, proteins, lipids, cholesterol, DNA, • RNA, glycoproteins and glycolipids and their importance in biological systems. • To understand the organic chemical principles in life processes. • To develop skills to determine amino acid and nucleotide sequences of proteins and • DNA respectively.	• Describe the role of biomolecules in biosystem • Summarize the Carbohydrates– classification, structure and functions • Categorize the proteins based on its structure and function • Determine the structure and functions of Nucleic acids • Perceive Lipids based on its structure and functions • Identify the Water soluble and Fat soluble Vitamins	**Global developmental needs**

			Course Objectives	Course Outcomes	
3	HUMAN PHYSIOLOGY AND NUTRITION	BC711	• To understand the composition and functions of Blood and Plasma. • To know the process of gaseous exchange in tissues and lungs, respiratory adaption to high altitude. • To understand the nerve physiology and muscle physiology. • To gain insight into digestive system and renal physiology. • To gain awareness on nutritional requirements and energy measurements.	• Describe the structure of major human organs and explain their role in the maintenance of healthy individuals. • Correlate the process of gaseous exchange in tissues and lungs, respiratory adaption to high altitude. • Measure the heart function and learn the circulatory system • Determine the muscular system and excretory system • Classify the nutritional requirement for different age people, during pregnancy and Lactation • Compile the energy measurements, BMR, SDA, RNI and RDA	**Global developmental needs**
4	ADVANCED ENZYMOLOGY	BC810	• To acquire fundamental knowledge on enzymes and their importance in biological reactions. • To understand the ability to difference between a chemical catalyst and biocatalyst. • To know the mechanism of enzyme and its importance in biological reactions.	• Describe the structure, classification and functions of enzymes • Analyze the kinetics of enzyme and chemical catalyzed reactions • Assess the mechanism of enzyme action and enzyme inhibitory and regulatory process. • Summarize the isolation and purification of enzymes • Identify the enzyme immobilization methods and their applications	**Global developmental needs**

			• To learn the kinetics of enzyme catalyzed reactions and enzyme inhibitory and regulatory process. • To understand the role of enzymes in clinical diagnosis and industries	• Determine the applications of enzymes and their future potential	
5	INTERMEDIARY METABOLISM	BC811	• To determine the biochemical reactions, central metabolic pathways and kinetics of energy and homeostasis of metabolism. • To learn the importance of lipids as storage molecules and as structural component of biomembranes. • To understand the importance of high energy compounds, electron transport chain, and synthesis of ATP under aerobic and anaerobic conditions. • To acquire knowledge related to the role of TCA cycle in central carbon metabolism, importance of anaplerotic reactions	• Observe the basic concepts of Bioenergetics, mechanisms of oxidative phosphorylation and photophosphorylation • Analyze how various biomolecules are metabolized inside the body in order to produce energy for various functions and how various metabolic pathways regulate growth and development of living beings • Determine the composition and structure of biomembranes, transport mechanisms across biological membranes and learn the concept and mechanism of ATP synthesis. • Justify the role of high energy compounds, how carbohydrates serve as energy source to power various functions, interplay of regulatory networks in the body, hormonal	**Global developmental needs**

				• and redox balance. • To gain insights into metabolic engineering for the production of useful biomolecules.	• regulation of metabolism, etc. • Recognize the role of lipids as storage molecules, role of TCA cycle in central carbon metabolism, importance of anaplerotic reactions, and redox balance occurring in the cells. • Integrate how metabolism can be related with issues in lifestyle, health and disease	
6	ELECTIVE II - ADVANCED ENDOCRINOLOGY	BC812A	• To learn the basic aspects of hormones and endocrine glands. • To provide in depth knowledge about chemical structures of hormones. • To understand the classification of hormones. • To identify about the functions of hormones. • To compile information about new diseases associated with hormones	• Demonstrate the basic aspects of hormones, glands, chemical classification and functions. • Exhibit the daily secretion of hormones and abnormal values. • Acquire knowledge about Reproductive Endocrinology. • Make inferences of Neuroendocrine integration in homeostasis. • Make judgments about Pathophysiology of Hormones. • Compile information about new diseases associated with hormones.	**Global developmental needs**

| 7 | MOLECULAR BIOLOGY | BC911 | • To learn the basic information about Mendelian genetics and the basic aspects of molecular theories.
• To understand the process of DNA replication involving the roles of various DNA polymerases and other proteins with special reference to the events in prokaryotes and eukaryotes.
• To Gain the insights on the various kinds of DNA repair and major diseases resulting from defective DNA repair
• To acquire the knowledge on various kinds of DNA recombination and a detailed understanding of the process of Holliday recombination
• To acquire the knowledge related to major features of chloroplast and mitochondrial DNA. | • Observe the basic information about Mendelian genetics and the basic aspects of molecular theories.
• Analyse the processes involved in replication and the role of DNA polymerases.
• Determine the composition, structure and types of RNAs and its mechanisms.
• Justify the role of peptides and protein molecules produced during translation process.
• Recognize the role of proteins during gene expression and its regulations.
• Integrating mol. Bio mechanism with clinical concepts | **Global developmental needs** |

| 8 | IMMUNOLOGY | BC912 | • To gain acquaintance on the organs involved in the immune system, antigens and different types of antibody.
• To acquire knowledge on types of immunity, immune response and complement system.
• To gain knowledge about different vaccines and the importance of different immunological techniques.
• To acquire knowledge about the MHC complex, transplantation immunology and tumor immunology.
• To comprehend the complications of hypersensitivity, Autoimmune diseases and Immunodeficiency disorders | • Anatomy of Lymphoid organs, immune cells and its associated theories
• Discuss the Types of Immunity, Immune response and Complement system.
• Focus on different vaccines and the importance of different immunological techniques.
• Compile the MHC complex and Transplantation immunology
• Explores the properties of tumor cells, Immune surveillance and tumor antigens.
• Outline the complications of hypersensitivity, Autoimmune diseases and Immunodeficiency disorders. | **Global developmental needs** |

| 9 | ADVANCED CLINICAL BIOCHEMISTRY | BC1009 | • To learn about the specimen: composition, collection and various clinical methods.
• To gain the knowledge about metabolic disorders associated with carbohydrate and lipids.
• ☐ To familiarize with the renal disorders linked with protein metabolism and non-protein nitrogenous constituents.
• To understand the functions of liver and its associated disorders.
• To understand the oxidative stress and damage to the macromolecules. | • Express the various methods in collection and analysis of clinical specimens like blood and urine.
• Determine the clinical defect of numerous disorders linked to carbohydrate and lipoprotein metabolism.
• Examine the type of renal disorder based on the concentration of blood substances like urea, creatinine and uric acid.
• Categorize the disorder associated with serum enzymes like Acid phosphatase, Streptokinase, Asparaginase, Isocitrate dehydrogenase, Ceruloplasmin, CK and LDH.
• Evaluate the types of jaundice by the level of serum conjugated and unconjugated bilirubin.
• Compile the effect of free radicals and role of enzymatic and non-enzymatic antioxidants on the macromolecules. | **Global developmental needs** |

| 10 | ELECTIVE IV - PLANT: BIOCHEMISTRY AND MOLECULAR BIOLOGY | BC1011A | • To explain and understand the Biochemistry of photosynthetic system.
• To learn and understand the basics of plant cell and its physiology.
• To create awareness on Plant diseases and their metabolism.
• To impart basic knowledge on plant biotechnology.
• To develop sound knowledge on biochemical events associated with growth regulators and herbicide. | • Acquire broad knowledge on Photosynthesis, Cyclic and non-cyclic photophosphorylation and Calvin cycle.
• Infer the different types of plant hormones, Symbiotic and Non-symbiotic nitrogen fixation.
• Integrate about stress physiology and secondary metabolites
• Recall the basic concepts of plant physiology, Biochemistry of seed democracy and phytochromes.
• Outline the DNA Polymorphism and plant genetic engineering.
• Provide the information on plant vectors, plasmid, biodegradable plastics and fruit ripening. | **Global developmental needs** |

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Name of the Programme: BCA

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTERNET CONCEPTS AND WEB DESIGN	CA108	• To know the concept of basics of Internet. • To become knowledgeable in Fundamentals of Html • To ensure that the students have a basic understanding of creating Forms and Frames. • To understand the concept of Cascading Style Sheet. • To be aware of the method of Java Script.	• Learn about the basic structure and use of an HTML element (content, attributes, etc.) K1 • Understand the basics of data communication, networking, internet and their importance, and recognize the different internet devices and their functions K2 • Apply the knowledge of HTML tags to design web pages. K3 • Analyze the performance and functionalities of HTML tags, CSS and JavaScript k4 • Evaluate the web contents using JavaScript k5 • Develop web programs with effective design and perform client side	**Global Developmental Needs**

			Course Objective	Course Outcome	
				validations. K6	
2	PROGRAMMING WITH C	CA207	- To enhance their analyzing and problem-solving skills and use the same for writing programs in C. - To develop logics and that will help them to create programs, applications in C. - To identify programming task involved in a given computational problem. - To identify tasks in which the numerical techniques learned are applicable and apply them to write programs.	- Relate the basic terminology of algorithm and flowchart used in programming. - Explain the concepts of structure and union - Acquire knowledge on decision making and looping concepts - Distinguish the processing of sequential and random-access file. - Develop programs with various concepts like decision structures, loops and functions. - Validate the use of arrays and pointers in data structures	**Global Developmental Needs**
3	OFFICE AUTOMATION	CC110	- To know the history of computers. - To understand the basic formatting features in word processor. - To have knowledge on functions of spreadsheet. - To understand the fundamental concepts of presentation. - To explore knowledge on sending receiving mails		**Global Developmental Needs**

4	INTERNET CONCEPTS AND WEB DESIGN	CA110	- To know the concept of basics of Internet. - To become knowledgeable in Fundamentals of Html - To ensure that the students have a basic understanding of creating Forms and Frames. - To understand the concept of Cascading Style Sheet. - To be aware of the method of Java Script.		**Global Developmental Needs**
5	COMPUTER NETWORKS	CA312	- To understand the organization of computer networks. - To test and implement the different network connections. - To understand the performance of network layers like IPv4 and IPv6 addresses. - To understand the way protocols currently in use in the Internetwork and the requirements for designing network protocols. - To understand the concepts of WWW and electronic mail.	- Understand the general principles of data communication. - Assess error detection and correction techniques. - Experiment the performance of network layer and IPv4 and IPv6 addresses. - Analyze various transport layer protocols like Stop-and-Wait, Go-Back-N and selective repeat protocols. - Develop the concept of client /server programming, DNS, FTP, Electronic mail and SNMP. - Memorize the services and features of TCP and UDP	**Global Developmental Needs**
6	PROGRAMMING WITH JAVA	CA313	To understand the basics of Object Oriented Programming concepts, Character Set, tokens, variables, data types, operators and	Remember the basic concepts of object oriented programming and important features of Java	**Global Developmental Needs**

			• control structure. • To understand the fundamental concept of Java like class and object, array, methods, constructors and inheritance. • To understand the concept of package, Exception Handling and Threading. • To understand the concepts of Applets, AWT and SWING.	• language. • Solve the inter-disciplinary applications using the concept of inheritance. • Explain different techniques on creating and accessing packages and exception handling to avoid abnormal termination of program and multithreading concepts to develop inter process communication. • Design simple GUI interfaces to interact with users, using Applets. • Recognize the process of graphical user interface design and implementation using swing. • Describe Swing component classes	
7	ELECTIVE – I ANGULAR JS	CA315A	• To helps the reader understand how Angular JS differs from other frameworks • To set up a test environment for Angular JS • To shows why Angular JS is a better framework for building modern web applications and websites • To working on a functional application and implement testing • To covers search engine optimization as it relates to Angular JS applications and websites.	• Understand how Angular JS differs from other frameworks • Set up a test environment for AngularJS • Shows why Angular JS is a better framework for building modern web applications and websites • Working on a functional application and implement testing • Covers search engine optimization as it relates to Angular JS applications and websites. • Retrieve data from back-end	**Global Developmental Needs**

				server, manipulate it and display it with ease.	
8	ENTERPRISE APPLICATIONS USING .NET	CA413	• To know the differences between desktop and web application. • To create and manipulate GUI components in C#. • To configure an asp.net application. • To create ASP.Net applications using standard .net controls. • To develop a data driven web application. • To connect the data sources and managing them.	• Know the differences between desktop and web application. • Understand the development and deployment cycles of enterprise applications • Create and configure the GUI components in C#. • Create ASP.NETapplications using standard .NET controls. • Analysis and evaluate the validation and rich controls • Create and connect the data sources in ADO.NET	**Global Developmental Needs**
9	RELATIONAL DATABASE MANAGEMENT SYSTEM	CA414	• To understand the basic concepts of Database and Data Models. • To learn how to implement the query language in database. • To understand the advance features query language used to design an efficient database • To know database design models exist. • To understand the consequences of bad database design and how it can be overcome.	• Discuss database concepts, applications, data models • Identify the tables and relationships between tables. • Apply normalization concepts to design the database. • Implement data definition, constraints, schema to organize data in database • Integrate the concepts of queries, joins, aggregate functions in SQL. • Develop the strong ability to use the database concepts for create queries and operations.	**Global Developmental Needs**

10	ENTERPRISE APPLICATIONS USING JAVA	CA516	• This course provides a platform with enterprise features such as distributed computing and web services. Java EE has several specifications which are useful in making web pages, reading and writing from database in a transactional way, managing distributed queues. The Java EE contains several APIs which have the functionalities of base Java SE APIs such as Enterprise JavaBeans, connectors, Servlets, Java Server Pages and several web service technologies.	• Learn and Understand the structure of web applications and enterprise programs • Develop web applications using servlets • Apply the knowledge on servlet to create enterprise programs • Analyze the concept of Servlets and JSP Create JSP programs with the programming knowledge • Apply database knowledge to implement CRUD applications • Evaluates the program	**Global Developmental Needs**
11	PROGRAMMING WITH PYTHON	CA517	• Python is a high-level interpreted language that has many benefits, including easy-to-read and easy-to-write syntax and powerful libraries that provide additional functionality. It is used extensively for practical applications in engineering and data science. This course covers a range of topics, such as data types, control flow, functions, file operations, and object-oriented programming	• Learn core Python scripting elements • Understand the OOP concepts and file operations • Demonstrate the use of Python libraries, packages and modules • Apply the library files for graphical representation and visualization • Create the GUI applications • Construct scripts to scrap the web to obtain web content.	**Global Developmental Needs**

			and GUI applications.		
12	CLOUD COMPUTING	CA612	• This course introduces domain of cloud infrastructures, virtualization, software defined networks, cloud storage, and programming models. Modern data centers enable many of the economic and technological benefits of the cloud paradigm. Focus on virtualization as a key cloud technique for offering software, computation and storage services.	• Describe the principles of Parallel and Distributed Computing and evolution of cloud computing from existing technologies • Implement different types of Virtualization technologies and Service Oriented Architecture systems • Identify the concepts of cloud reference model, economics of the cloud and open challenges • Analyse Aneka cloud application platform and thread programming • Choose among various cloud technologies for implementing applications • Install and use current cloud technologies	**Global Developmental Needs**
13	MOBILE APPLICATION DEVELOPMENT	CA613	• This course explains and demonstrates the architecture, platform, tools, libraries and components needed to develop a mobile app. The objective of the course is to understand and design mobile apps using activities, layouts, widgets and fragments. It also provides libraries, methods and tools to	• Explain about the mobile app development architecture, framework, packages, Android basic syntax, libraries and Virtual devices available to develop mobile apps. • Understand and implement Activities, Indents and Frameworks • Understand and apply layouts,	**Global Developmental Needs**

			develop professional apps to send SMS, Notifications, Mails, Telephony and data manipulation using SQLite.	• widgets and view groups to design mobile apps. • Analyze and design mobile apps with images, menus in different layouts • Create Notifications and database operations with SQLite. • Analyze and build mobile apps for sending SMS, Emails, telephony and Google play store registration	
14	WEB PROGRAMMING USING PHP	CA614	• The objective of this course is to delivers the fundamentals of PHP. Its helps to build dynamic web applications. It deals with MySQL queries and database connections to interact with frontend applications.	• Understand the basic fundamental syntax and functions. • Understand and evaluate form processing and validation methods • Know the file handling concepts. • Understand and apply MySQL functions. • Apply and solve various database operations • Connect frontend and backend applications using PHP`	**Global Developmental Needs**
15	ELECTIVE – II :BIG DATA ANALYTICS	CA615A	• This course describes the 5 V's of data and offers NoSQL databases for data management, R Programming for data analysis. The objective of this course is to identify study and understand the types of digital data, new big data database tools and languages to process the big	• Describe the types of digital data, characteristics of big data, challenges in big data, data analytics and its tools. • Understand and compare the NoSQL databases and its features • Study and build simple applications using basics of R language and its packages.	**Global Developmental Needs**

			data. It also demonstrates the tools and methods to store big data with different data structures, perform statistical analysis and visualize the results.	- Understand and develop methods to read and process external data using R syntax - Understand, apply and evaluate the visualization methods available in R - Evaluate, and implement statistical algorithms for the online free data set	
16	ELECTIVE II: - CRYPTOGRAPHY AND NETWORK SECURITY	CA615B	This course develops a basic understanding of the algorithms used to protect data. A wide variety of basic cryptographic primitives will be discussed along with recent developments. The cryptanalysis part understands, challenges for cyber security that includes network security, data security, mobile security, cloud security and endpoint security.	- Recollect basic principles of security services and mechanisms. - Describe the concepts of network security like firewalls, IP security and virtual private network - Categorize various cryptographic techniques that are used to prevent attacks. - Analyze and design classical encryption techniques and block ciphers - Implement system level security applications - Create an algorithms using both symmetric and asymmetric key cryptography	**Global Developmental Needs**

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MCA

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ENTERPRISE APPLICATIONS WITH JAVA	MCA160T	• To understand methods of the Applet and UI Component classes of the AWT. • To create a well-structured MVC web application using Servlet, JSP and Struts Framework.	• Discover and Apply various components and technologies used in Java platform • Describe, Understand and adapt the basics of JSTL tags and EJB. • Apply AWT and Swing components to design GUI • Examine and develop Client-Server programs using Socket, RMI and Servlet. • Distinguish and Choose the Struts 2 framework for building Java EE applications. • Device and Construct a well-structured MVC web application using Servlet and JSP.	**global development al needs**
2	**OPEN SOURCE DATABASE MANAGEMENT SYSTEM**	MCA164I	• To construct simple and moderately advanced database queries using Structured Query Language (SQL). • To understand the role of the database administrator.	• Discover the various SQL, PL/SQL and DBA statements. • Understand the basic concepts of relational database management system and design structure models. • Apply the normalization procedure to design a suitable structure for a given problem situation.	**global development al needs**

				• Extract, formulate and execute different SQL queries to interact with the database. • Implement processing logic in the form of PL/SQL blocks routines like functions, procedures, cursors and triggers. • Understand the role play of the database administrator and	
3	**COMPUTER GRAPHICS**	MCA261T	• To provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends. • To learn the principles and commonly used paradigms and techniques of computer graphics. • To impart a thorough knowledge on 2D and 3D transformations, modeling, image synthesis, and rendering. • To gain a proficiency with OpenGL for writing applications that produce 2D and 3D computer graphics. • To gain a proficiency in DIRECTX for writing applications that produce 2D and 3D computer graphics.	• Understand and apply the core concepts and mathematical foundations of computer graphics. • Analyze and apply 2D and 3D transformations on graphics objects and their applications in composite form. • Extract scene with different clipping methods and correlate the clipping methods. • Compare and correlate various projections and visible surface detection techniques for the display of 3D scene on 2D screen. • Device and Develop programs for the 3D transformation, projection and visible surface methods in OpenGL. • Model, Devise, Develop interactive 3D applications using DIRECTX software.	**local, regional ,national and global development al needs**

4	**DESIGN AND ANALYSIS OF ALGORITHMS**	MCA262T	• To learn the basics of Algorithms design and analysis. • To understand the divide & conquer and greedy methods with applications. • To understand the dynamic programming and backtracking methods with applications. • To learn the mode of randomized and approximation alogrithms with applications. • To learn about reducation, non-deterministic and parallel alogrithm with applications.	• Observe and elicit the relevance of algorithms for computational problems solving and software engineering. • Observe and Apply various algorithmic approaches, techniques and methods. • List, Elicit and Apply design and analysis techniques to model and solve a problem. • Correlate and Evaluate the efficiency of an algorithm • Differentiate and Compute the time and space complexities of an algorithm. • Design and Evaluate any given problem with mathematical rigor to provide a scientific solution.	**global developmental needs**
5	**ELECTIVE I: ARTIFICIAL INTELLIGENCE**	MCA263TA	• Study the concepts of Artificial Intelligence. • Learn the methods of solving problems using Artificial Intelligence.	• Discover and Apply the various technologies used in Artificial Intelligence • Observe and Discover the history of artificial intelligence (AI) and its foundations • Observe and Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.	**global developmental needs**

				• Analyse and Evaluate various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. • Ability to choose appropriate Knowledge based approach for problem solving. • Draft, Design and create their own artificial intelligence applications for solving a real life problem	
6	**BLOCK CHAIN TECHNOLOGY**	MCA361T	• To understand the concepts of a public digital ledger to share information in a trustworthy and secure way. • To discuss and cover both the conceptual as well as application aspects of Block chain.	• Observe and Explain the architecture of a blockchain network. • Observe and Apply the basics of decentralization. • Discuss and Practice the basics of security. • Differentiate and Use DES and AES algorithms in blockchain. • Correlate and Apply the bitcoin infrastructure with blockchain. • Demonstrate and Use the bitcoin transaction life cycle. • Observe, Elicit and Classify the bitcoin payment infrastructure. • Correlate and Utilize the types of digital wallets.	**global development al needs**

			Course Objectives	Course Outcomes	
				• Observe and Classify the application of blockchain in Internet of Things. • Discuss and Justify the application of blockchain in Government sector.	
7	**OPEN SOURCE FRAMEWOKS**	MCA362T	• To understand the web technology and be able to architect, write, debug, and run complete web applications using PHP, MySQL and Angular JS. • To create and develop the web applications with Laravel Framework. • To use the Spring framework container to develop in any Java environments.	• Describe and Discuss the necessity of open source framework in PHP and Java. • Observe and Elicit the basics of MVC concepts in AngularJS, Laravel and Spring Web. • Observe and practice the knowledge of frameworks in the development of web applications • Analyse and Evaluate the performance of web frameworks. • Ability to choose appropriate framework and practice them in real time problem applications. • Draft and develop web application using open source framework.	**global development al needs**
8	**ELECTIVE III: BIG DATA**	MCA364B	• To understand the basics and challenges of Big Data. • To learn and practice NoSQL database MongoDB. • To develop MapReduce jobs using Hadoop Frameworks and HDFS.	• Bring out and Classify the data grouping mechanism in structured, semi-structured, and unstructured form.	**global development al needs**

				• Observe and Give examples for how big data are organized (framework/architecture) and made used by the enterprise's (domain specific). • Observe and Practice the un-structural data representation using the NoSQL database MongoDB (domain specific). • Infer and Device the big data file structure format using the Map-Reducer architecture style. • Generalize and Practice the Map-Reducer procedure on the specified problem. • Analyze and Evaluate the real data samples using Map Reducer procedure	
9	**ELECTIVE IV: DATA ANALYTICS WITH R PROGRAMMING**	MCA466A	• In this course students will learn R. Programming language, data analytics, data visualisation and statistical model for data analytics. • By completion of this course, students will be able to know about data analytics	• Recognize and Explain the nature, source and the applications of data analytics • Observe and Understand the basics on R programming language and apply suitable techniques for data analytics. • Visualize and Report the data from different sources	**global developmental needs**

				• Draft and Develop proficiency with statistical analysis of data • Demonstrate skill in data management and conclude with the result • Create and Classify the data for analytics through active and reinforcement learning	
10	**ELECTIVE IV: DATA AND INFORMATION SECURITY**	MCA466B	• To explain the key concepts in cryptography. • To learn the concepts of security. • To learn symmetric key cryptography. • To understand asymmetric key cryptography. • To understand internet security protocols.	• Observe and Discuss the basic principles of security. • Observe and Apply the substitution and transposition methods. • Recognize and Compute symmetric ciphers • Tabulate and Compute Asymmetric ciphers • Observe , Discuss and Correlate the concept of digital signatures with security • Recognize and Express the structure of Public Key Interfaces. • Observe and Explain the basic concepts in Internet Security. • Observe and Use the Internet Security Protocols. • Recognize and Operate the User Authentication Methods. • Recognize and Assess the architecture of kerberos.	**global development al needs**

| 11 | **ELECTIVE V: GAME PROGRAMMING** | MCA467B | • To learn avout the gaming environment.
• To learn about the 3D programming concepts.
• To know about the client and server module in game programming.
• To create a model game | • Describe and Discuss the principles of 2D and 3D graph images and handling of shapes.
• Observe and Demonstrate the basics of game design and development.
• Analyze and Evaluate the simple games in internet and customized the same and get executed.
• Apply and develop simple game using C, C++, languages.
• Draft and Design a new game
• Observe, Recognise and Perceive to deploy the game in internet of as desktop publisher | **global developmental needs** |

SACRED HEART COLLEGE (AUTONOMOUS)

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Name of the Programme: B.A ENGLISH

S.No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	Literary Forms	EN209	• To introduce students to the English literary background • To inculcate in the beginners a proper understanding of all the literary forms • To enable the students to understand each literary form in isolation and in relation to other forms • To identify literary forms of given literary pieces and their characteristics • To recognize and define a few important forms of poetry such as sonnet, ode, ballad, elegy, etc.	• CO1: Know and relate the English literary background with the literary pieces • CO2: Analyse the literary forms with the literary piece. • CO3: Compare each literary forms in relation to other forms. • CO4: Identify literary forms of given literary pieces and their characteristics. • CO5: Recognize and define a few important forms of poetry such as sonnet, ode, ballad, elegy, etc.	National/ Global

			Course Objectives	Course Outcomes	
2	Literary Forms	EN209	• To introduce students to the English literary background • To inculcate in the beginners a proper understanding of all the literary forms • To enable the students to understand each literary form in isolation and in relation to other forms • To identify literary forms of given literary pieces and their characteristics • To recognize and define a few important forms of poetry such as sonnet, ode, ballad, elegy, etc.	• CO1: Know and relate the English literary background with the literary pieces • CO2: Analyse the literary forms with the literary piece. • CO3: Compare each literary forms in relation to other forms. • CO4: Identify literary forms of given literary pieces and their characteristics. • CO5: Recognize and define a few important forms of poetry such as sonnet, ode, ballad, elegy, etc.	**National/ Global**
3	English Language Teaching	EN618	• To provide the history of English Language Teaching • To understand the historical need that called for innovation in teaching methods • To equip the learners with a knowledge of various methods both evolving and being used in ELT • To help the students to understand the current trends and methods in ELT • To enable the students to have hands on experience • To use the latest technology to acquire LSRW skills	• CO1: Trace the history of English Language Teaching and understand the importance of teaching and learning other languages • CO2: Discuss the historical need that called for innovation in teaching methods in language teaching • CO3: Know and demonstrate various approaches and methods, both evolving and being used currently in ELT • CO4: Apply ELT methods in real time to smaller groups • CO5: Use the latest technology to acquire LSRW skills and be autonomous learners.	**national developmental needs/Global**

7	English Language Teaching	EN618	• To provide the history of English Language Teaching • To understand the historical need that called for innovation in teaching methods • To equip the learners with a knowledge of various methods both evolving and being used in ELT • To help the students to understand the current trends and methods in ELT • To enable the students to have hands on experience • To use the latest technology to acquire LSRW skills	• CO1: Trace the history of English Language Teaching and understand the importance of teaching and learning other languages • CO2: Discuss the historical need that called for innovation in teaching methods in language teaching • CO3: Know and demonstrate various approaches and methods, both evolving and being used currently in ELT • CO4: Apply ELT methods in real time to smaller groups • CO5: Use the latest technology to acquire LSRW skills and be autonomous learners.	**national developmental needs/Global**

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M.A ENGLISH

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	WORLD CLASSICS IN TRANSLATION	EN718	• To help the learners imbibe classical literature through translations for their rich source of cultural heritage. • To acquire the knowledge of great literary traditions due to their strong influence on British and American literature. • To enable the learners to appreciate the merits of translation. • To make the learners compare the treatment of major themes by writers of various countries. • To enable the learners to understand and appreciate various stylistic devices used by writers across the world.	• Discuss the themes elucidated in all the literary works in World Classics in Translation • Know the merits of translation. • Compare the treatment of major themes by writers of various countries. • Understand and appreciate various stylistic devices used by writers across the world • Analyze the different characteristics of classic literature	Global developmental needs

			Course Objectives	Course Outcomes	
			• To enable the learners to analyze the prescribed works		
2	CHAUCER AND ELIZABETHAN AGE	EN719	• To introduce the learners to the versatility and range of Knowledge of this period. • To gain insight into the transition from the 16th to the 17th Centuries and the influence • of new philosophy and new science. • To enlighten the different genres employed during the period and the contribution of the writers of the age • To understand the rise of the drama in the period • To invest the knowledge of socio political and religious turmoil of the age among the learners • To enable the learners to analyze the prescribed works	• At the end of the course, the learners will be able to: • Significantly point out the religious and cultural temperament of the period • Analyze and interpret the language of the early writers of the Modern English period and the rise of drama during the period • Interpret the different genres employed during the period and the contribution of the writers prescribed for study • Analyze the different characters of the drama in a unique way • Distinguish the various aspects of tragedy and comedy of the Elizabethan period • enable them to appreciate the merits of the age	**National and global developmental needs**
3	ELECTIVE I: SUBALTERN STUDIES	EN722B	• To introduce the current trends in Literature. • To concentrate on the social issues of recent years. • To bring about change in the attitudes towards the subaltern. • To help all to live in the society	• Associate to the realities of Subaltern culture. • Establish the profound voices of Subalterns. • Identify and analysis the works of writers in Subaltern Literature. • Focus on the Sensibility of	**National and global developmental needs**

			respecting every individual.	• Subaltern predicaments • Evaluate the limitations of subaltern literature	
4	ELECTIVE I: WOMEN'S WRITING	EN722C	• To initiate an interest in the learners for the women writers in English. • To enable them to appreciate the thought and expression of women writers who displayed their perception on the world, culture, and gender- bias with novelty in attitude and innovation in techniques. • To sensitize the learners to various issues that women experience. • To equip learners to examine and appreciate works produced by women. • To encourage learners to extend their understanding of issues gained from the text to the world around them	• Demonstrate knowledge of the texts, the authors and the literary and social movements. • Analyze the representation of female/feminist experience in literature. • Examine and critique the role played by socio-cultural-economic contexts in defining women. • Respect difference and transcend their knowledge gained from the text to the world around. • Analyse and engage in the theoretical and Scholarly debate about Feminist Writing	**National and global developmental needs**
5	RESTORATION AND EIGHTEENTH CENTURY	EN818	• To introduce learners to the poetry of Restoration and Eighteenth century within the context of the literary, cultural, religious and political developments of the age. • To survey the emergence of new models of poetry and	• By the end of this course, learners will be able to: • Analyze the development of genres in 18th-century British literature. • Analyze 18th-century British literature within its cultural and historical context.	**National and global developmental needs**

			drama in this period of high ideals combined with wit and language. • To analyze 18th-century literature from a variety of critical and theoretical frameworks. • To analyze the mechanisms of canon formation and the import of canonicity within literary studies. • To provide learners with guided research and writing experience in 18th-century studies.	• Analyze contemporary scholarship on 18th-century British literature. • Identify and evaluate the mechanisms of canonization. • Evaluate 18th-century British literature. • Engage in archival research.	
6	ELECTIVE II: POST-COLONIAL LITERATURE	EN822C	• To enable learners to know the current social-Political climate in the developing countries. • To appreciate postcolonial literatures through a study of representative authors and poets of native culture • To impart the knowledge of the postcolonial theories	• Understand the Postcolonial theories • Understanding the histories and the past of the Postcolonial Nations • Identify the current political and social issues of the developed and developing countries • Analysing the perspectives of the writers through the various texts of the world • Identifying the current trends and the changing Postcolonial culture	**National and global developmental needs**
7	ROMANTIC AND VICTORIAN AGE	EN918	• To provide an overview of the literary climate where the romantic sensibility finds an authentic voice touch and	• At the end of the course, the learners will be able to: • Grasp the political and social backgrounds of the growth of the	**National and global developmental needs**

			intensity. • To explore the development of the specialist forms of literature in the Victorian age led by thinkers, poets and novelist towards enlightenment. • To analyze and interpret the works of the Romantic writers applying the different canons of criticism • To grasp the political and social backgrounds of the growth of the romantic and Victorian spirit	romantic and Victorian spirit • Compare and contrast the Pre-Romantic and the Romantic and Victorian writers • Analyze and interpret the works of the Romantic writers applying the different canons of criticism • Understand the reasons for the conflicts experienced during Victorian period with the advent of science • Acquire a knowledge about the unique characteristics of the Romantic and Victorian society and its literary outputs	
8	AMERICAN LITERATURE	EN920	• To remember, understand and evaluate the poetry of American writers. • To understand about the absurdity of war in the prose. • To analyse the class difference in the Drama and its impact on the society. • To comprehend and evaluate the Short Stories in terms of plot, character, themes, symbols and settings. • To understand about the struggle for life and determination from the Novel	• CO1: Recall and relate the various themes in the American poems. • CO2: Describe the impact and consequences of American war. • CO3: Compare and contrast the social variations portrayed by the American Playwrights. • CO4: Critically appraise the story focusing on the symbolic and thematic representation of America. • CO5: Analyze the survival issues in the fiction	**National and global developmental needs**

9	ELECTIVE III: MODERN ENGLISH GRAMMAR AND USAGE	EN921B	• To familiarize learners with basic concepts in English grammar • To acquaint learners with grammatical categories of words • To train learners in formal and functional analysis of sentences • To make learners understand rules of usage and verb-agreement	• CO1: Speak and write grammatically correct sentences • CO2: Identify the grammatical categories and apply them in appropriate situations • CO3: Carry out formal and functional analysis of sentences • CO4: Employ a good language with proper subject verb agreement • CO5: Write coherent and unified paragraphs with adequate support and detail	**National and global developmental needs**
10	SHAKESPEARE	EN1022	• To reread Shakespeare texts in the light of recent approaches • To Understand the postmodern versions of Shakespeare • To Understand the critics view on Shakespeare • To review the traditional concepts of genres and also to focus on new interpretation in the contemporary context.	• At the end of the course, the learners will be able • To reread Shakespeare texts in the light of recent approaches • To Understand the postmodern versions of Shakespeare • To Understand the critics view on Shakespeare • To review the traditional concepts of genres and also to focus on new interpretation in the contemporary context.	**National and global developmental needs**

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Programe Name : B.COM CA

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTERNET CONCEPTS AND WEB DESIGN	CC208	• To know the concept of basics of Internet. • To become knowledgeable in Fundamentals of Html • To ensure that the students have a basic understanding of creating Forms and Frames. • To understand the concept of Cascading Style Sheet. . • To be aware of the method of Java Script.	• Understand the basics of data communication, networking, internet and their importance, and recognize the different internet devices and their functions • Create a basic HTML document using the core HTML elements. To learn about the basic structure of an HTML element (content, attributes, etc.) and how they are used in the context of HTML web pages. • Design Web Page Elements using Forms, Frames, and Table Tag. • Illustrate how to use CSS to design the HTML web page. Introduced to the basic CSS concepts (declaration, rule set, rule, selector, etc.) and implement	International Needs

			basic designs using CSS. • Develop a basic programming skill using JavaScript, and implement simple JavaScript applications through hands-on exercises. • Analyze Program Flow using JavaScript (JS), and Adding External Libraries to Enhance HTML Applications.	
2	RELATIONAL DATABASE MANAGEMENT SYSTEM	CC414	• To understand the basic concepts of Database and Data Models. • To learn how to implement the query language in database. • To understand the advance features query language used to design an efficient database • To know database design models exist. • To understand the consequences of bad database design and how it can be overcome.	• Discuss database concepts, applications, data models • Identify the tablesand relationships between tables. • Apply normalization concepts to design the database. • Implement data definition, constraints, schema to organize data in database • Integrate the concepts of queries, joins, aggregate functions in SQL. • Develop the strong ability to use the database concepts for create queries and operations.	International Needs
3	WEB PROGRAMMING USING PHP	CC516	• To understand the basic fundamental syntax and functions. • To understand form processing and validation methods. • To know file handling concepts. • To understand basic MySQL functions. • To implement PHP using XML functions.	• Explain about the web servers, installing web servers, basic syntax, built-in functions available in PHP to create server side scripts • Understand and implement validation of forms, processing and handling form values using PHP scripts • Create and use Cookies, Session, sending mails and handling the errors and exceptions using PHP	International Needs

				- built-in functions. - Understand and implement the file processing techniques, uploading files using PHP Scripts - Create and maintain database using MySQL queries. - Create and maintain MySQL database from PHP	

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B.Sc Psychology

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	GENERAL PSYCHOLOGY – I	SY101	• To introduce students to the basic concepts of the field of psychology with an emphasis on applications of psychology in everyday life. • To understand the concepts of sensation, Perception and Attention. • To know the Structural features of Consciousness. • To gain knowledge on Learning and its related theories. • To learn the process of Memory.	• Summarize the origin of psychology as science and acquire knowledge of the various methods used in psychology to understand human behavior • Define concepts and explain sensation, perception and attention • Demonstrate the structural features of Consciousness • Explain role of Learning, and compare various theories of learning • Describe the fundamental processes of Memory • Gaining knowledge about the goals of psychology	**global developmental needs**

			Course Objectives	Course Outcomes	
				• Interpret the theory of sensation.	
2	BIOLOGICAL PSYCHOLOGY – I	SY102	• To explore the biological basis of experience and behavior. • To develop an understanding of the influence of behavior, cognition, and the environment on bodily system. • To develop an appreciation of the neurobiological basis of psychological function and dysfunction. • To understand the process of neural communication. • To understand the influence of various hormones on behavior.	• Relate the research methods with the study of brain and behavior • Demonstrate the structure and functions of neurons • Associate the process of neural communication. • Explain the role of Neurotransmitter • Demonstrate the structure and functions of the nervous system • Demonstrate the structure and functions of brain • Illustrate the influence of various Hormones on behaviour	**global developmental needs**
3	GENERAL PSYCHOLOGY - II	SY201	• To know the basic aspects of thinking and behaviour • To understand the process of motivation and frustration. • To know underlying principles of physiological of emotion and stress • To gain the knowledge about the various approaches of personality • To understand the concepts of conflicts of frustration	• Relate the basic aspects of thinking and behavior • Demonstrate the process of motivation and frustration • Explain the underlying principles of physiological of emotion and stress • Elaborate on the attributes of creativity and Intelligence • Compare and contrast the various approaches of personality • Infer the problem solving and decision making process • Interpret the concepts of conflicts	**global developmental needs**

				and frustration.	
4	BIOLOGICAL PSYCHOLOGY - II	SY202	- To explore the biological basis of sleep and dream - To comprehend the brain mechanism involved in regulating thirst and hunger - To know the biological basis of emotions - To understand the biological basis of sleep & dream and various sleep disorders - To identify the brain areas associated with learning and memory	- Explain the biological basis of sleep & dream and various sleep disorders - Elucidate brain development and neuro plasticity - Summarize the brain mechanism involved in regulating thirst and hunger - Comprehend the various type of eating disorders - Illustrate the biological basis of emotions - Recognize the attack behavior and escape behavior of fear and anxiety - Identify the brain areas associated with learning & memory	**global developmental needs**
5	DEVELOPMENT PSYCHOLOGY - I	SY316	- To relate the developmental stages from conception till birth - To tell about human Physical growth through birth - To introduce the developmental stages of infancy and babyhood - To know about the developmental process in early and late childhood - To understand the stages of socialization, family relations	- Outline the developmental stage of conception through birth - Gain knowledge on human physical growth and development across life-span - Explain the developmental stage of infancy and babyhood - Gain knowledge on the various developmental process of early and late childhood - Relate various developmental	**global developmental needs**

				stages of socialization, family relations and personality development	
				• Describe the hazards in developmental stages.	
				• Identify the specific skills in childhood.	
6	INTRODUCTION TO THEORIES OF PERSONALITIES	SY317	• To relate the concepts, assessment, measurement and research methods pertaining to personality. • To know the various psychoanalytic perspective of personality • To understand the life span and trait perspective of personality • To gain knowledge about existential humanistic perspective of psychology • To gain about behavioral, cognitive and social perspective of personality	• Describe the concepts, assessment, measurement and research methods pertaining to Personality • Outline the various psychoanalytic perspectives of Personality • Summarize the life span and trait perspective of Personality • Illustrate the existential humanistic perspective of Personality • Explain Behavioral, Cognitive and Social perspectives of personality • Classify the personality factor • Demonstrate the Psychological type, ego crises, personality disposition	**global developmental needs**
7	DEVELOPMENTAL PSYCHOLOGY - II	SY416	• To know the developmental process of puberty and adolescence. • To analyze various developmental process of young adulthood	• Explain the developmental process of puberty and adolescence • Relate the various development process of young adulthood	**global developmental needs**

			• To know the developmental tasks of middle age • To define the problem related to old age • To Gain knowledge about hazards and happiness in human life-span	• Explain the developmental tasks of middle age • Identify problems related to old age • Gain knowledge about hazards and happiness in human life-span • Relate the growth spurt and body changes in puberty • Explain the hazards of puberty till old age	
8	POSITIVE PSYCHOLOGY- (ELECTIVE I)	SY504A	• To know the basics of positive psychology and its association • To identify the basic concepts related to positive emotions, well being and happiness • To gain knowledge about self control, regulation and personal goal setting • To know the importance of positive cognitive states and processes • To create positive environment.	• Explain the basics of Positive psychology and how Positive psychology is associated to the other branches of psychology • Define basic concepts related to positive emotions, wellbeing and happiness • Elaborate on Self Control, Regulation and Personal Goal Setting • Summarize the importance of positive cognitive states and processes • Develop skills to create a positive environment • Explain positive schooling • Describe optimism, pessimism, spirituality	**global developmental needs**

| 9 | FORENSIC PSYCHOLOGY | SY504B | • To describe the Psychology and law
• To identified the major influences on the accuracy of eyewitness memory
• To summarize the Psychology of confession
• To outline the Psychology of Investigation
• To know the Criminological Psychology and Psychological profile of violence | • Explain the Psychology and law
• Identified the major influences on the accuracy of eyewitness memory
• Summarize the Psychology of confession
• Outline the Psychology of Investigation
• Demonstrate the profiling and common characteristics of offender
• Describe Criminological Psychology and Psychological profile of violence
• Summarize the characteristics of violent offenders and their related behaviors. | **global developmental needs** |

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M. Sc. Counselling Psychology

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTRODUCTION TO PSYCHOLOGY (FC-1)	MSY130T	• Explain the history of Psychology and the various psychological research methods. • Understand the meaning and principles behind sensation, perception and attention • Elaborate on the theories of Learning, Memory and Forgetting • Comprehend the theories of Motivation and Emotion • Compare the various theories of personality	• Describe the origin and history of psychology and explain various research methods in Psychology • Relate the processes in sensation, perception and attention with behaviour • Compare learning with memory and forgetting • Interpret theories of motivation and emotion • Evaluate theories of intelligence and personality • Collaborate with the basic knowledge of what influences human thought, behavior and emotions	**global developmental needs**

2	BIOLOGICAL PSYCHOLOGY (FC-2)	MSY131T	• Understand the core Premises of biological psychology. • Comprehend the structure and functions of Neuron. • Explain the structure and functions of nervous system. • Summarize the influence of endocrinological factors on behavior. • Understand the Physiological basis of Emotion, Learning and memory.	• Outline the scope, nature and methods of Biological Psychology • Relate the structure and functions of Neuron • Analyse the structure and functions of nervous system. • Summarize the influence of endocrinological factors on behaviour. • Demonstrate the Physiological basis of Emotion, Learning and memory. • Use technical terminology related to biological psychology	**global developmental needs**
3	LIFE-SPAN PSYCHOLOGY (MC-1)	MSY132T	• Gain knowledge on human physical growth and development across life-span. • Understand the human psychological changes from conception to old age. • Know about the critical periods in human development for the occurrence of specific behavioral changes. • Understand children and child rearing. • Understand hereditary, environmental influences on development.	• Explain the human physical growth and development across life-span. • Illustrate the human psychological changes from conception to old age. • Analyze the critical periods in human development for the occurrence of specific behavioral changes. • Summarize the process of social and moral development. • Identify the factors influencing the development and adjustment.	**global developmental needs**

			• Understand the concept and process of human development across the life-span.	
4	PSYCHOPATHOLOGY-I (MC-4)	MSY231T	• To know the meaning and historical background of abnormal behavior. • To learn to use DSM 5 and ICD 11 classificatory systems. • To understand about the various mental disorder syndromes. • To understanding the skills required to diagnose various mental disorders. • To understand the etiological factors of various mental disorders	• Understand various psychopathological conditions • Appraising classification systems in Psychopathology • Compare the etiology of various psychological disorders. • Identify the clinical features of various psychological disorders. • Appraise the factors maintaining psychological disorders. • Understanding of the various psychological disorders and their treatment	**global developmental needs**
5	THEORIES OF PERSONALITY (MC-5)	MSY232T	• Acquire knowledge on personality theories. • Provide theoretical foundation for counselling practice. • Help the trainee counsellors to choose appropriate techniques for a particular case. • Understand the concept of personality. • Understand the people having	• Relate the personality traits with behavior • Compare psychoanalytic and neo psychoanalytic approach • Categorize trait and type approach to personality • Appraise learning and behavioural theories • Compare between humanistic and cognitive Approaches • Contrast the major theories and approaches to explaining	**global developmental needs**

			different personalities.	personality	
6	PSYCHOTHERAPIES (MC-6)	MSY233T	• Describe various theoretical foundation for the practice of psychotherapy • Comprehend the theory behind different schools of psychology. • Give a bird's eye view of various therapies and their respective foundations. • Offer clarity regarding the choice of specific techniques for a particular case • Teach students the practice of psychotherapy in clinical and non-clinical population	• Demonstrate competence in analysing theoretical foundation for the practice of psychotherapy • Understand the theory behind different schools of psychology. • Evaluate the various therapies and their respective foundations. • Identify and choose specific techniques for a particular case • Apply psychotherapy in counselling set up for clinical and non-clinical population. • Write Psychological Report	**global developmental needs**
7	POSITIVE PSYCHOLOGY (MC-11)	MSY430T	• Introduce to nature, goals and history of Positive Psychology. • Understand the positive emotional states and process. • Offer knowledge of positive cognitive states and processes. • Develop a balanced conceptualizations of Mental Health and Behavior • Creation of a positive environment	• Describe the nature, goals and history of Positive Psychology • Summarize the positive emotional states and process • Explain Self efficacy, Optimism and hope • Articulate the concepts related to Mindfulness, Flow, and Spirituality • Contrast the dynamics behind Altruism, Gratitude, and Forgiveness. • Create Positive Environment in	**global developmental needs**

			Provide foundation on the basics of Psychological testing • Explain Nature, meaning and use of psychological tests. • Develop skills and competencies in test construction and standardization • Teach the student to establish reliability and validity • Train students to use psychological tests in various settings	school and organization	
8	PSYCHOMETRY (ME-2)	MSY433B	• Provide foundation on the basics of Psychological testing • Explain Nature, meaning and use of psychological tests. • Develop skills and competencies in test construction and standardization • Teach the student to establish reliability and validity • Train students to use psychological tests in various settings	• Describe the basic concepts related to Psychometry and psychological testing • Contrast the differences between psychological and physical properties of scales and measures. • Comprehend the Nature, meaning and use of psychological tests • Construct and standardize psychological tests • Establish validity and reliability for psychological tests • Apply psychological testing in various settings	**global developmental needs**

B.Sc Microbiology

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	FUNDAMENTALS OF MICROBIOLOGY	MB103	• To make students to understand the Fundamentals in Microbiology. • To know the basic principles and types of Light microscope and Electron microscope. • To familiarize with detailed structure of Prokaryotes. • To acquire knowledge on various Sterilization techniques. • To learn the Microbial cultivation techniques and methods for isolation of microorganisms.	• Develop an understanding of the Fundamentals of Microbiology. • Define and understand the concept of Cell, Cell theory, Prokaryotes and Eukaryotes. • Categorize the various types, principles and applications of Light microscope and Electron microscope. • Broad knowledge on the structure and functions of organelles of Bacteria. • Demonstrate a clear understanding of microbial control mechanisms through Sterilization techniques and Antibiotics. • Evaluate the methods used for the cultivation and identification of bacteria.	**Local and global developmental needs**
2	MICROBIAL DIVERSITY AND CLASSIFICATION	MB104	• To learn the Taxonomy of microorganisms. • To analyze the Ultrastructure of Fungi, Algae and Protozoa. • To understand the Classification of microorganisms.	• Understand the knowledge of Classifications and Taxonomy of Microorganisms in detail. • Acquire the basic knowledge on the Ultrastructure, Classification, Mode of nutrition and Reproduction of Fungi, Algae and Protozoa.	**National and global developmental needs**

			• To recognize the fundamentals on Economic importance of microorganisms. • To impart knowledge on Molecular identification of microorganisms	• Discuss the Economic importance of Fungi, Algae and Protozoa. • Examine and define the structure, properties and classification of Human, Plant and Animal viruses. • Explore and recommend the Molecular techniques applied in identification of microorganisms. • Compile the basic information on the diversity and classification of Fungi, Algae, Protozoa and Algae.	
3	MICROBIAL PHYSIOLOGY AND METABOLISM	MB203	• To analyze the Nutrient requirements and Nutrition types of microorganisms. • To observe the Transport of Nutrients in Microorganisms. • To study the Microbial growth and its measurement. • To learn the Microbial metabolism and respiration. • To understand the Photosynthesis reaction in microorganisms	• Help learners to define and understand the objectives of Microbial physiology, Microbial nutrition and Microbial metabolism. • Analyze and understand the basic concepts of Nutrient requirements and Nutrition types of microorganisms. • Provide students with learning experiences that help in still deep interests in learning Transport of nutrients in Microorganisms. • Develop broad and balanced knowledge and understanding of Microbial growth, Growth measurement and Preservation of microorganisms.	**Global developmental needs**

				• Equip students with appropriate knowledge on Microbial metabolism which includes Catabolism and Anabolism. • Recommend students to find the Photosynthetic reaction in microorganisms.	
4	BIOINSTRUMENTATION	MB204	• To provide knowledge about Safety measures in Microbiology laboratory and First aid methods. • To understand the principles and applications of various instruments used in Life science. • To learn the techniques for operating the Microbiological instruments. • To explain the principles and applications of types of Chromatography techniques. • To learn principles, types and applications of Calorimeter and Spectrophotometer.	• Determine the Safety measures in Microbiology laboratory and First aid methods. • Define and explain the principles and applications of various instruments used in Life science. • Explain the Working principles and Applications of Various Microbiology laboratory instruments. • Analyzing the principles and applications of types of Chromatography techniques. • Evaluate the Working principle and Applications of Electrophoresis techniques. • Perform the detailed analysis on Calorimeter and Spectrophotometer.	**Local, national and global developmental needs**

5	IMMUNOLOGY	MB301	• To make the students to understand the Immune system. • To strengthen the knowledge of students through a detailed study on Antigens, Antibodies and Immunoassays	• Introducing the Immunology to study various types of Cells and Organs in Immune systems and Mechanism of immune activation	**National and global developmental needs**
6	BIOINOCULANT TECHNOLOGY	MB401	• To study about the Production, Formulation, Method of application and Quality control of Bioinoculants. • To understand the role of Nitrogen fixers, Phosphate solubilizers, AM fungi and Algal biofertilizers. • To learn the ability of Biofertilizers and Biocontrol agents	• The course Bioinoculant Technology has been designed to provide the knowledge to the students about Natural organic farming. This paper also provides the details of Production, Formulation, Method of application and Quality control of Bioinoculants	**Local, National and Global developmental needs**
7	MICROBIAL GENETICS	MB402	• To make the students to understand the Genetics of microorganisms. • To focus on the basic principles of Cloning vectors and Gene transfer mechanism. • To study the recent advances in microbial genetic principles for strong foundation in Microbiology	• The application of Microbial Genetics has completely transformed the Microbiology field with new possibilities ranging from the treatment of human diseases to the development of new forms of crops. It also looks set to be the most promising and exciting science of the next few decades	**Global developmental needs**

8	MOLECULAR BIOLOGY AND GENETIC ENGINEERING	MB501	• To make the students to understand the Molecular Biology and Genetic Engineering. • To focus on the basic principles of DNA Replication, Transcription, Translation, Mutation and DNA Repair mechanisms. • To under the basic concepts and applications of Genetic Engineering	• Molecular Biology and Genetic Engineering dispense recent study and innovation of significant methods and techniques. This paper embraces information on DNA Replication, Transcription, Translation, Mutation, DNA Repair mechanisms and various applications of Genetic Engineering.	**Local and Global developmental needs**
9	MEDICAL BACTERIOLOGY	MB502	• To make the students to understand the Medical Bacteriology. • To study the pathogenicity, clinical symptoms and treatment for disease causing bacteria. • To provide the ability to characterize, isolate and identify different Medically important bacteria.	• To introduce the knowledge of the medically important bacteria, bacterial morphology with the main focuses being the pathogenicity, clinical symptoms, identification and treatment for different bacteria.	**Regional, and global developmental needs**

10	VIROLOGY	MB503	• To make the students to understand the role of viruses in major diseases. • To study general aspects of Structure, Classification, Replication, Pathogenicity, Clinical Syndrome, Laboratory diagnosis, Treatment and Preventive measures for Viruses. • To understand the structure and replication of Bacteriophages	• Virologist are highly demanded in the Medical research companies, Pharmaceutical companies, Governmental agencies, Laboratory testing companies or Cancer treatment or Research companies depending upon the specialization. This paper will provide the wide knowledge on Structure, Classification, Replication, Pathogenicity, Clinical Syndrome, Laboratory diagnosis, Treatment and Preventive measures for Viruses	**Regional, and global developmental needs**
11	MEDICAL MYCOLOGY AND PARASITOLOGY	MB504	• To make the students to understand the role of Fungi, Protozoa and Helminths in Human diseases. • To study general aspects of Pathogenicity, Clinical Syndrome, Laboratory diagnosis, Treatment and Preventive measures for Fungal and Parasitic diseases. • To establish basic theoretical knowledge in the fields of Mycology and Parasitology	• Students will be familiar with current developments and advances in the field of Mycology and Parasitology. They also will gain more knowledge on Pathogenicity, Clinical Syndrome, Laboratory diagnosis, Treatment and Preventive measures for Fungal and Parasitic diseases	**Regional, and global developmental needs**

12	HEALTH CARE AND HYGIENIC PRACTICES	MB505A	• To strengthen the knowledge of personal health care and hygienic to students. • To provide a detailed study on vaccine and its schedule throughout the life time for all age group. • To understand the various type of pollution and its preventive measures	• Introducing the basics about the Health care and Hygienic practices to study various types of Vaccines to control the life time infectious disease	**Regional, and global developmental needs**
13	ELECTIVE - COMPUTATIONAL BIOLOGY	MB505B	• To detail the importance of Computer in the field of Life sciences. • To obtain good understanding about the interpretation of Biological database. • To uptake knowledge in latest tools and technology	• The paper Computational Biology adds information about the search engines and various software tools involved in Bioinformatics and Chemoinformatics.	**Global developmental needs**
14	ELECTIVE - PHARMACEUTICAL MICROBIOLOGY	MB505C	• To explains the concept, principles on control and management of manufacturing and quality control testing of Biopharmaceutical products. • To understand a view on regulatory issues involving the trends in biopharmaceutical industry and changing regulatory needs related to products	• The paper Pharmaceutical Microbiology provides an overview of the concepts of manufacture Biopharmaceutical products in today's regulatory environment	**Global developmental needs**

15	SSP – 1: NUTRITION AND DIETICS	MB507SP1	• To know about importance of food, nutrition and nutrients. • To understand the nutrients associated health risks. • To learn about the various diets used for various disease conditions	• Nutrition is the study of nutrients in food, how the body uses nutrients, and the relationship between diet, health and disease. In this Self-study paper Nutrition and Dietics, students will gain knowledge about the Importance of nutrients and various diets used for various disease conditions	**Local, National, and global developmental needs**
16	Non – Major Elective I – APPLIED MICROBIOLOGY	NMB 501	• To make students to understand the fundamentals of microbiology and its applications. • To encode the importance of the role of microorganisms in food industries and agricultural sciences both in beneficial and harmful ways. • To study about the water borne disease and microbial standards of water quality.	• Microbiology has played a central role in all aspects of Biological sciences. This course Applied Microbiology will familiarize the students from various Arts and Science Departments with fundamental knowledge on microbiology and its applications	**Global developmental needs**
17	MICROBIAL BIOTECHNOLOGY	MB601	• To learn the basic tools in Microbial Biotechnology. • To understand the various concepts of Recombinant DNA Technology and Microbial products. • To emphasize on IPR issues and need for knowledge in patents in Biotechnology	• The paper Microbial Biotechnology helps the student to study theoretical concepts of Biotechnology and their applications in Genetic engineering and Microbiology. It also creates awareness on the Intellectual property rights and patenting of Biotechnological processes.	**National and global developmental needs**

18	ENVIRONMENTAL MICROBIOLOGY	MB602	• To creating the awareness about environmental problems among people. • To provides a comprehensive overview of biogeochemical processes relevant to environmental scientists and engineers mediated by microorganisms. • To study about the water borne pathogens, water borne disease, microbial standards of water quality, biogenic pollution, air borne microbes and waste water management	• The paper Environmental Microbiology will create awareness about Microbes and environment, distribution, diversity and ecological importance, characteristics of microorganisms in different environment and its biogeochemical cycle. This paper will also provides a detailed knowledge on Waste water treatment technologies	**local and global developmental needs**
19	VERMITECHNOLOGY	MB603	• To study about the properties of soil and microbial composting. • To understand the biology of Earthworms and its role in Vermicomposting. • To learn the ability of Earthworms in Organic farming and Solid waste reclamation	• The course Vermitechnology has been designed to provide the knowledge to the students about Organic farming through Composting and Vermicomposting. This paper also provides the details of Earthworms and its role in Solid waste reclamation	**National and global developmental needs**
20	FOOD MICROBIOLOGY	MB604	• To encode the importance of the role of microorganisms in food industries both in beneficial and harmful ways. • To obtain a good understanding of food microbiology and become qualified as	• The Food Microbiology paper adds information about the role of microorganisms in many food, beverage and various industries both in production and spoilage processes	**Global developmental needs**

			microbiologist in food industries. • To know the role of microbes in the spoilage of food products		
21	INDUSTRIAL MICROBIOLOGY	MB605	• To encompass the use of industrially important microorganisms in the manufacture of food or industrial products. • To understand the Fermentation process and design of various Fermentors. • To study the use of microorganisms for the production of Antibiotics, Vaccines, Organic acids, Organic solvents, Amino acids, Vitamins and Industrial enzymes.	• From the Industrial Microbiology paper, students acquire the knowledge in the large scale production of Industrial product and providing the trends to cater the needs of industry	**Regional, and global developmental needs**
22	Non – Major Elective 2 – MICROBIAL DISEASES AND HEALTH CARE	NMB601	• To make the students to understand the various diseases caused by microorganisms. • To study the clinical conditions and preventive measures for microbial diseases. • To provide the knowledge about Antibiotics, Drugs, Vaccines and Vaccination	• To introduce the knowledge of the medically important microorganisms which are responsible for causing diseases. The course Microbial disease and health care will provide the knowledge to the students about microbial diseases and its preventive measures, vaccines and vaccination	**Global developmental needs**

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M.Sc Applied Microbiology

S No	Title of the Paper	Course Code	Course Objective	Course Outcome	Relevance
1	GENERAL MICROBIOLOGY AND MICROBIAL DIVERSITY	MB701	• To impart basic knowledge about the History and classification of Microbiology. • To make students to understand the fundamentals and diversity of Microbiology. • To learn the Taxonomy, Ultrastructure, Classification of microorganisms. • To provide insights on cultivation techniques and antibiotics. • To recognize the fundamentals on Economic importance of microorganisms.	• Knowledge on Landmark discoveries in Microbiology and different domains classification of living organisms. • Define and examine the structure, properties and classification of Bacteria, Fungi, Algae, Protozoa and Viruses. • Broad knowledge on the structure and functions of organelles of Prokaryotes and Eukaryotes. • Discuss the Economic importance of Fungi, Algae and Protozoa. • Explore and recommend the Staining techniques, Culture medium and Biochemical tests applied in identification of microorganisms.	**Global developmental needs**

				• Demonstrate a clear understanding of microbial control mechanisms through Sterilization techniques and Antibiotics.	
2	MICROBIAL PHYSIOLOGY AND METABOLISM	MB702	• To illustrate Bacterial nutrition and their utilization. • To discuss cultivation methods and factors related to microbial growth. • To study the Microbial growth, nutrition and its uptake. • To demonstrate the concepts of Microbial metabolism and Respiration. • To understand the Photosynthesis reaction in microorganisms.	• Help learners to define and understand the objectives of Microbial physiology, Microbial nutrition and Microbial metabolism. • Analyze and understand the basic concepts of Nutrient requirements and Nutrition types of microorganisms. • Provide students with learning experiences that help in still deep interests in learning Transport of nutrients in Microorganisms. • Develop broad and balanced knowledge and understanding of Microbial growth, Factors influencing growth, Growth measurement and Preservation of microorganisms. • Equip students with appropriate knowledge on major fermentation and metabolic pathways for energy generation in microbial cells. • Recommend students to find the reactions of Intermediate metabolism and Photosynthesis in microorganisms.	**Local and Global developmental needs**

			Course Objectives	Course Outcomes	
3	IMMUNOLOGY	MB703	• To provide overview of immune system, antigen antibody structure and interactions. • To inculcate the principles of vaccine development. • To provide insights to the Human Defense Mechanisms against Infections. • To strengthen the knowledge of students through a detailed study on Antigens, Antibodies and Immunoassays. • To integrate immunology with health and enrich the knowledge for autoimmune disorders, hypersensitivity reaction.	• Discuss cells and organs of immune system and its role in types of Immunity. • Evaluate the reactions between various antigens and antibodies and apply the knowledge in diagnosing diseases and disorders. • Analyse the concepts and factors influencing immunity, HLA typing and its applications. • Compare the role of MHC in graft rejection in transplantation and plan appropriate strategies. • Describe the principles of immunity for vaccine development and analyse types of hypersensitivity reactions. • Develop theoretical knowledge of various diseased conditions generated due to interplay of immune system components.	**Global developmental needs**
4	MOLECULAR MICROBIOLOGY	MB704	• To make the students to understand the Molecular Biology and Genetic Engineering. • To focus on Genome organization, Transcription and Translation process in Prokaryotes. • To introduce the basic principles of DNA Replication,	• Analyze and understand the basic principles of DNA Replication, Transcription, Translation, Mutation and DNA Repair mechanisms. • Describe the central cell biological processes and how they are regulated. • Evaluate the role of Vectors in Gene Cloning.	**National and Global developmental needs**

			Transcription, Translation, Mutation and DNA Repair mechanisms. • To explain the application of various Gene cloning vectors. • To be highly experienced in Prokaryotic and Eukaryotic Genetic Transformation.	• Apply the principles of selection, construction, screening of recombinants and application of artificial transformation techniques. • Better understanding of Gene expressions. • Development of Molecular Techniques for DNA and Protein analysis.	
5	ELECTIVE: MICROBIAL INSTRUMENTATIO N	MB705A	• To understand the principles and applications of various instruments used in Life science. • To learn the techniques for operating the instruments. • To study the concepts of Biological and Radiation hazard materials. • To explain the principles and applications of types of centrifuge and chromatography techniques. • To learn principles, types and applications of Spectroscopy.	• Determine the Safety measures in Microbiology laboratory. • Define and explain the principles and applications of various instruments used in Life science. • Explain the Working principles and Applications of Various Microbiology laboratory instruments. • Analyzing the principles and applications of types of Chromatography techniques. • Evaluate the Working principle and Applications of Electrophoresis techniques. • Perform the detailed analysis on Calorimeter and Spectrophotometer.	**National and Global developmental needs**

6	ELECTIVE: BIOSTATISTICS	MB705B	• To demonstrate the importance of data collection and presentation of data • To perform methods used for measuring central tendency, deviation and error • To discuss Probability theory and applications • To explain Correlation, regression and hypothesis testing methods • To identify appropriate method for analysis of variance and learn few statistical packages	• Classify the data and understanding the role of Biostatistics in research. • Provide basic knowledge of statistics and tools used for several quantitative analysis in Microbiology. • Apply and provide knowledge of data collection and presentation of data in various fields of Microbiology. • Assess and implement central tendency, deviation and error in the data collected during research. • Apply and develop the knowledge of probability theory and its applications in research data analysis. • Predict the significance of the biological phenomenon on the basis of available data set.	**Global developmental needs**
7	MEDICAL BACTERIOLOGY	MB801	• To impart in-depth understanding of normal flora and its importance, learn bacterial classification and virulence factors contributing to pathogenicity. • To provide insights into processing of samples and laboratory diagnosis of pathogenic bacteria. • To illustrate methods involved	• Introducing the knowledge of the Medically important bacteria. • Differentiate normal flora from pathogens, analyse the factors contributing to pathogenicity and acquire the skill of sample collection, transport and processing for bacterial identification. • Describe the morphology with the focuses being the pathogenicity, symptoms, identification and	**National and global developmental needs**

			in collection and transport of samples and its biosafety guidelines for bacterial identification. • To teach various cultivation methods, pathogenesis and clinical features of bacteria affecting humans. • To provide the ability to characterize, isolate and identify different Medically important bacteria.	treatment for different bacteria. • Analyse and create an awareness on bacterial diseases and classification for diagnosing Gram positive bacteria and spore formers. • Evaluate the implications of Mycobacterial diseases and drug resistance in the society. • Detect the etiology and virulence factors of Gram negative bacterial diseases, interpreting the laboratory results after following standard operating procedures.	
8	MEDICAL VIROLOGY	MB802	• To make the students to understand the role of viruses in major diseases. • To provide the knowledge on general characters and classification of viruses. • To teach the structure, cultivation and various strategies of Virus replication. • To impart knowledge regarding the diagnostics, clinical aspects and related implications of human viral diseases and emerging viral infections. • To describe the growth behaviour differences between normal cells and cells transformed by DNA and RNA	• Recognize characters of different types of viruses. • Compare the complex interaction between viruses and host cells. • Analyze and teach newer emerging viral infections including the viral mutant forms for emerging. • Outline the basics and essential concepts of Virology. • Evaluate and discuss the structure, classification, pathogenesis, replication, purification and disease control. • Discuss viral vaccines and create awareness about the new emerging threats of viral diseases and modern approaches of virus control.	**National and global developmental needs**

			viruses.	
9	MEDICAL MYCOLOGY AND PARASITOLOGY	MB803	- To illustrate the basics of medically important Fungi and Parasites. - To provide in-depth knowledge on Superficial and Systemic fungi. - Demonstrate the importance of Opportunistic infections caused by fungi. - To study general aspects of Pathogenicity, Clinical Syndrome, Laboratory diagnosis, Treatment and Preventive measures for Fungal and Parasitic diseases. - To explain the role of Protozoans and Helminths as infectious agents.	- Identify, Classify and Cultivate medically important fungi and parasites. - Evaluate and analyze the role of superficial and systemic fungi. - Predict the importance of fungi causing opportunistic infections in immunocompromised individuals. - Assess the role of Protozoans and Helminthes in anthroponotic and zoonotic infections. - Apply diagnostic techniques to identify, isolate and interpret fungal and parasitic infections. - Creating awareness on appropriate preventive and chemotherapeutic measures.	**National and global developmental needs**
10	ELECTIVE - PHARMACEUTICAL MICROBIOLOGY	MB804A	- To illustrate the Principles of Pharmaceutical Microbiology. - To understand the basics of Pharmaceutical Microbiology and important microorganism playing role pharmaceutically. - To understand different products of microbial origin playing key role in Pharmaceutical applications.	- Understanding and explaining the role of microbes in Pharma industries in both positive and negative aspects. - Administering antibiotics and determine Antibiotics resistance for advanced Drug delivery system. - Analyzing and determining drug formulation regarding to guidelines and regulations.	**Global developmental needs**

			• To understand role of Secondary metabolites in Pharmaceutical industry. • To understand good practices and regulation involved in utilizing microbial product for pharmaceutical application	• Examining microbial contamination during pharmaceuticals formulations and production. • Advice good laboratory practices for better understanding. • Formulate regulations for utilizing microbial product in pharmaceutical applications.	
11	ELECTIVE - BIOINFORMATICS	MB804B	• To explain basics and uses of internet and biological databases. • To provide an overview of various bioinformatics tools, databases available and sequence analysis. • To provide knowledge on database concept, management, retrieval along with utilization in gene and protein analysis. • To demonstrate the use of tools for parsing and retrieving sequences and structures from appropriate databases and predicting genes. • To impart in-depth knowledge on deducing protein structures, analyse the expression of proteins, genes and to study variations.	• Effectively use internet in biological database searching, communicating biological data by depositing, storing and retrieving sequences and structures. • Analyse and identify genes and proteins from a set of sequences using appropriate Bioinformatic tools. • Apply the evolutionary relatedness in predicting structure, function of biomolecules, metabolism and to Perform In silico Drug designing. • Demonstrate and evaluate the protein and nucleotide interaction through Bioinformatics tools. • Deduce the structure of proteins, gene expressions. • Justify the variations thus applying Bioinformatics in several fields for benefit of the society.	**Global developmental needs**

			Objectives	Outcomes	
12	RESEARCH METHODOLOGY	MB901	• To learn about research designs, ethics in scientific research, data collection and analysis of scientific data using software. • To analyze the Art of Report and Scientific writing. • To study the basic Statistics methods used for Life science research. • To gain the knowledge on Laboratory animals and its maintenance. • To provide insights on importance of scientific communication, ethical issues in research, plagiarism and IPR.	• Provides knowledge to collect Research paper from different Web sources. • Demonstrate the importance of Scientific communication, Ethical issues in research. • Identify appropriate methods for Analysis of variance and learn few Statistical packages • Provides knowledge about the maintenance and ethics related to Laboratory animals. • Evaluate the students about reading the different ongoing research in area of Microbiology. • Creating an awareness on Plagiarism and IPR.	**National and global developmental needs**
13	BIOINOCULANT TECHNOLOGY AND PLANT PATHOLOGY	MB902	• To study about the Production, Formulation, Method of application and Quality control of Bioinoculants. • To create an awareness on Soil microorganisms in Agriculture. • To understand the role of Nitrogen fixers, Phosphate solubilizers, AM fungi and Algal biofertilizers. • To give knowledge on Plant pathogen interaction and its control. • To learn the ability of	• Acquire knowledge on Bioinoculant technology. • Gives the knowledge to the students about Natural organic farming. • Explains the details of Production, Formulation, Method of application and Quality control of Bioinoculants. • Analyzing the diseases causing ability of microorganisms in plants and its control measures. • Developing different methods for the Pest control using microbes.	**National and global developmental needs**

			Biopesticides and Biocontrol agents in Plant growth.	• Recommending the factors for good Soil quality and Agricultural output through sustainable Microbiological applications.	
14	ENVIRONMENTAL MICROBIOLOGY	MB904	• To describe the distribution and enumeration of air microflora and categorize the air borne diseases. • To discuss the Terrestrial ecosystem and Aquatic ecosystem. • To give an overview about role of microorganisms for the cycle of Carbon, Nitrogen, Phosphorus and Sulphur in the nature. • To illustrate the process of Solid waste treatment and Sewage water treatment, and determine the role of microorganisms in water pollution and water quality. • To gain knowledge about Bioremediation mechanisms provided by microbes.	• Assess the role and importance of microorganisms in Atmosphere, Hydrosphere and Pedosphere. • Understanding the role of microorganism in recycling Soil nutrients through Biogeochemical cycles. • Provides a detailed knowledge on Solid waste and Waste water treatment technologies. • Create an awareness to students with current research in environmental microbiology. • Point out the general principles and subject knowledge in the field of Environmental Microbiology. • Gain knowledge about Bioremediation and Biodegradation of complex plant polymers, sustaining and improving plant growth through improving nutrient availability.	**Global developmental needs**
15	ELECTIVE: MICROBIAL REMEDIATION	MB905A	• To motivate against environmental pollution. • To find solution for pollution using microbes. • To study the remediation	• Developing basic skills Environmental microbiology and Microbial remediation of wastes. • Finding solution for various pollution related problems.	**Global developmental needs**

			• process by plants, fungi, plants and algae. • To develop knowledge about the environmental risk assessment and remediation. • To gain knowledge on role of microorganisms in their environment.	• Understand and explain the microbial metabolism of environmental contaminants. • Describing the principle of remediation process by various aspects. • Determining the Scientific problem related to pollution and remediation process will be explained. • Analyzing the scientific problem related to pollution and remediation process.	
16	ELECTIVE: VERMITECHNOLOGY	MB905B	• To study about the properties of soil and microbial composting. • To classify and compare the characteristics of earthworm species and waste materials needed for Vermicomposting. • To describe the process and benefits of Vermicomposting. • To understand the biology of Earthworms and its role in Vermicomposting. • To learn the ability of Earthworms in Organic farming and Solid waste reclamation.	• Provide the knowledge to the students about Organic farming through Composting and Vermicomposting. • Compare the difference between Microbial composting and Vermicomposting. • Observe the Biology of Earthworms and its role in Vermicomposting process. • Finding the details of Earthworms and its role in Solid waste reclamation. • Categorize the types of Earthworms and feed needed for Vermicomposting. • Develop various methods of Vermicomposting and its benefits to soil and plants.	**Local and global developmental needs**

			Course Objectives	Course Outcomes	
17	ELECTIVE – MICROBIAL NANOTECHNOLOGY	MB905C	• To assess types of nanoparticles for various medical research to find out the solution of human diseases. • To overcome the disadvantages of nanoparticle application. • To Physical and chemical properties of nanoparticles give idea about the biological process. • To apply the nanoparticle research in human health sector for their healthy society. • To motivate the researchers to carry the better advanced research on this field.	• Arrange the historical events in the field of Nanotechnology and its development. • Provide knowledge on synthesis of Nanoparticles and its vast applications. • Evaluate and characterize the methods for nanoparticles to know about its physical and chemical properties. • Analyze the Physical and chemical properties of nanoparticles for its Bioactivity. • Motivate the researchers to carry the better advanced research on this field. • Collect a better knowledge about targeting drug delivery by nanoparticles	**Global developmental needs**
18	FOOD MICROBIOLOGY	MB1001	• To distinguish the intrinsic and extrinsic factors of growth of microbes in food and illustrate the various food preservation techniques. • To describe the causes of spoilage of different types of food and plan the methods for detecting the causative microbes of food spoilage. • To obtain a good understanding of food microbiology and	• Understand the principles of microorganisms during various food-processing and preservation steps. • Apply the role of microorganisms, various preservation techniques, and assess the growth factors of food pathogens in food industry. • Evaluate the food contamination and spoilage, detect food pathogens based on physical, chemical and immunological methods.	**Regional and global developmental needs**

			become qualified as microbiologist in food industries. • To detect and interpret the food borne infections, intoxications and prevent food borne outbreaks. • To implement quality control and represent the standards in food production.	• Adapt an appropriate preservative technique for food. • Identify the interactions between microorganisms and the food environment, and factors influencing their growth and survival. • Plan hygiene and sanitation protocol, apply Hazard analysis, Food laws and standards for good quality in food production.	
19	INDUSTRIAL MICROBIOLOGY	MB1002	• To impart theoretical knowledge of role of microbes in Industrial production of different bioproducts. • To describe the industrial Fermentation processes. • To explain the Construction, Design and Operation of Fermentor. • To encompass the use of Industrially important microorganisms in the manufacture of food or industrial products. • To study the use of microorganisms for the production of Antibiotics, Vaccines, Organic acids, Organic solvents, Amino acids, Vitamins and Industrial	• Describe different fermentation techniques, bioreactor design, inoculum development for industrial fermentations, Microbial growth and product formation kinetics. • Media formulation and sterilization, isolation, preservation and improvement of industrially important microorganisms. • Assimilate knowledge on basics and different stages in Industrial fermentation process. • Evaluate theoretical knowledge on design, construction and working of different types of fermenters and medium formulation on an industrial scale. • Plan industrial production of microbial products and stages in	**National and global developmental needs**

				enzymes.	• Understanding the Industrial production of Antibiotics, Vaccines, Organic acids, Organic solvents, Amino acids, Vitamins and Industrial enzymes.	
20	ELECTIVE: MICROBIAL BIOTECHNOLOGY	MB1003A	• To learn the basic tools in Microbial Biotechnology. • To study the various Immobilization techniques. • To understand the various concepts of Recombinant DNA Technology and Microbial products. • To understand the production of Microbial Biotechnology products. • To emphasize on IPR issues and need for knowledge in patents in Biotechnology.	• Describe about different metabolites like antibiotics, organic acids, enzymes, drugs, vitamins, therapeutic peptides and pharmaceutical products, biopesticides and biofertilizers of microbial origin. • Analyze theoretical concepts of Biotechnology and their applications in Genetic engineering and Microbiology. • Assimilate knowledge on basics and different stages in Microbial fermentation process. • Evaluate the concept of Recombinant technology with special emphasis in microbial system. • Creates an awareness on the Intellectual property rights and patenting of Biotechnological processes. • Understanding the various concepts of Recombinant DNA Technology and Microbial products.	**Global developmental needs**

			Course Objectives	Course Outcomes	
21	ELECTIVE: MICROALGAL TECHNOLOGY	MB1003B	• To learn the basic tools in Microbial Biotechnology. • To learn about classification, characteristics of microalgae. • To formulate algal cultures and importance of culture collections. • To learn Upstream and Downstream techniques of microalgae. • To analyze the benefits of Microalgae for this universe.	• Understanding the benefits of Algae to environment. • Formulate algal cultures and importance of culture collections. • Describe commercial production of fuels and microbial enzymes. • Apply knowledge on Basic cultivation technology of microalgal cultivation technique. • Develop techniques on removal of heavy metals from contaminated water using microalgae. • Focus the idea about Bioremediation using microalgae.	**Regional, National and global developmental needs**
22	ELECTIVE: PROBIOTIC MICROBIOLOGY	MB1003C	• To acquire the knowledge and utilization of Probiotics and Prebiotics in our daily life. • To develop the Entrepreneurial Skill production and assessment of Probiotic microbes. • To list out the Commercial probiotic strains. • To explain the definition and types of Probiotics. • To characterize the limitation and dosage of Probiotics	• Understand the basic knowledge of Gastrointestinal Ecosystem. • Learn the Gastrointestinal microbiota and regulation of the Immune system. • Develop the Entrepreneurial Skill production and assessment of Probiotic microbes. • Knowledge about the Genetically modified probiotics. • Evaluate the In vitro assessment of probiotic microbes. • Analyze and explore the Genetic tools used for the identification of adaptation and probiotic factors.	**Global developmental needs**

			Course Objectives	Course Outcomes	
23	SSP: COMPREHENSIVE MICROBIOLOGY	MB1005S P1	• To understand the overall concept of all fields of Microbiology. • To provide knowledge about basic and advanced concepts in Microbiology. • To compare the characteristics of various categories of microorganisms. • To train the student for their Competitive exams (NET) like ARS/ASRB/CSIR. • To motivate the students to participate in Microbiology Competitive exams.	• Gain knowledge about the overall concepts of Microbiology. • Describe the basic and advanced concepts in Microbiology. • Compare the characteristics of various categories of microorganisms. • Focus the role of microorganisms in food, agriculture, environment and industrial sectors. • Understand and evaluate the role of microorganisms in various Competitive exams. • Help student to score and qualify in the NET exam which will be conducted by ARS/ASRB/CSIR.	**National and Global developmental needs**

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B.A. History

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ALLIED – I: PRINCIPLES OF TOURISM	AH111	• To enable the students to understand the basic structure and importance of tourism. • To understand the various elements of tourism. • To sensitize students about the various opportunities in tourism and allied sectors. • To understand the techniques of promoting tourism in the contemporary period. • To discuss the evolution of travel agency and tour operation business.	• It would enable the students to realize the significance of tourism for a nation. • The students understand the evolution of tourism. • Assess the opportunities available in the tourism and allied sectors. • The students absorb the nuances on the development of tourism. • Explain the influence of tourism over the country's economy.	**Global and national developmental needs**

2	ALLIED – II: TOURISM AND TRAVEL MANAGEMENT	AH211	• To know about the various International organizations of the tourism industry. • To realize the potential of tourism industry in India. • To discuss the evolution of travel agency and tour operation business in India. • To know about the various regulations and acts of government to promote tourism. • To make aware of transportation and accommodation to the domestic and international tourism.	• The course introduces the students to the latest trends and various prospects in the travel and tourism industry. • The student would know the various issues on tourism planning and the role of various national and international organizations. • The course tries to provide a deeper insight into the tourism industry. • The student will understand the growth of tourism since independence. • The course examines the various modes of transport and the importance of domestic and international tourism.	**Global national developmental needs**
3	ALLIED – IV: OUTLINES OF COMPARATIVE GOVERNMENTS	AH409	• To obtain the basic knowledge of state and different forms of governments. • To study the traditional and modern classification of Constitutions. • To assess the unicameral and bicameral system of legislatures in modern governments. • To provide the main principles of rule of law and administrative law.	• To evaluate the Theories of state. • Describe the value of the works of Aristotle's classification of constitution. • Explain the basic concept of the organs of Government. • Examine the influence of the executive and administrative law. • Analyze the role of political parties in India.	**Global and national developmental needs**

			• To illustrate the role of political parties and pressure groups in democratic system of government.		
4	ALLIED – IV: OUTLINES OF COMPARATIVE GOVERNMENTS	AH310	• To obtain the basic knowledge of state and different forms of governments. • To study the traditional and modern classification of Constitutions. • To assess the unicameral and bicameral system of legislatures in modern governments. • To provide the main principles of rule of law and administrative law. • To illustrate the role of political parties and pressure groups in democratic system of government.	• To evaluate the Theories of state. • Describe the value of the works of Aristotle's classification of constitution. • Explain the basic concept of the organs of Government. • Examine the influence of the executive and administrative law. • Analyze the role of political parties in India.	**Global and national developmental needs**
5	HT506 – HISTORY OF EUROPE – I (1453 – 1789 A.D.)	HT506	• To study the decline and fall of the Eastern Byzantine Empire. • To discuss about Michelangelo, DA Vinci and Raphael and their contributions. • To understand the key features of the Reformation in 16th and 17th century Europe.	• Students would have an idea about Renaissance and Reformation. • They get familiarized with the ideas of Martin Luther, Ignatius Loyola and Zwingli. • They learn the impact of Geographical Discoveries in the 15th and 16th centuries. • Students would understand the positive and negative	**Global developmental needs**

			• To assess the role of the absolutist rulers in 17th and 18th century Europe. • To discuss the establishment of colonies in Asia.	impacts of Industrial Revolution. • Students realize the significance of Geographical Discoveries, Renaissance and Reformations in Christianity.	
6	HISTORY OF CHINA AND JAPAN (1911 – 1990 A.D.)	HT507	• To study the history of China during the twentieth century. • To discuss about the revolutions and rebellions that took place in 20th century China. • To evaluate Japan's role in the world Wars. • To study the Manchurian issue which caused issues between Japan and China • To understand the economic and foreign policies of Japan and China.	• The students get basic idea about the history of China and Japan during the 20th century. • They get to know about the revolutions and protests which shaped present day Japan and China. • They understand how Japan and China's rivalry became one of the causative factors for the world wars. • They would be able to understand how China and Japan developed into Asia's dominant countries. • Apprehension of Japanese intervention in the second world war and construct japan to foreign and economic policies.	**Global developmental needs**
7	HISTORY OF EUROPE – II (1789 – 2000 A.D.)	HT606	• To Study the nature of French Revolution and emergence of Napolean Bonepartee • To analyse the unification process of Italy and Germany • To realise the basic reasons, trends and impacts of WWI and peace treaties	• To Study the nature of French Revolution and emergence of Napolean Bonepartee • To analyse the unification process of Italy and Germany • To realise the basic reasons, trends and impacts of WWI and peace treaties • To learn the common problems of WWII and its	**Global developmental needs**

			Course Objectives	Course Outcomes	
			• To learn the common problems of WWII and its results • To focuss on the cold war and emergence of power blocs and disintegration USSR	results • To focuss on the cold war and emergence of power blocs and disintegration USSR	
8	HISTORY OF USA (1865 – 1990 A.D.)	HT602	•	• Analyse the significance of the era of Reconstruction. • Estimate the Progressive movement under the American Presidents. • Elucidate the reasons for the great depression. • Discuss the part played by USA in the World War II. • Examine the various factors that made USA a world power.	**Global Developmental mental needs**
9	MAIN ELECTIVE – I: HUMAN RIGHTS	HT610A	• To understand the nature and scope of human rights. • To study the role of UNO in human rights developments. • To examine the relationship of NGO and human rights. • To know the role of constitution in the implementation of human rights. • To identify the various Human Rights Violations.	• Explains the historical growth of the idea of human rights. • Demonstrate the efforts of international organizations to safeguard Human Rights. • Significance of NGO in the implementation of human rights. • Importance of constitution in the implementation of human rights. • Interpret the problems of human rights violations and find solution	**Global and national developmental needs**

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PG Diploma in Medical Laboratory Technology

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ADVANCED MOLECULAR LABORATORY TECHNIQUES2	BCD209	• To learn the fundamentals of nucleic acid blotting techniques. • To explore the Polymerase Chain Reaction. • To understand the basic concepts of DNA sequencing. • To give basic ideas about how Hybridization are useful in research investigation. • To get familiar with the Radio isotopic techniques.	• Define and understand the nucleic acid blotting techniques, its principle, instrumentation and its types. • Determine the knowledge of polymerase chain reaction and its applications • Discuss the importance of DNA sequencing in diagnostics and its significance. • Assess the DNA finger printing and genome analysis. • Correlate the characteristics of Hybridization, immunohistochemistry HLA DNA polymorphism, and parentage testing. • Originate the principle, instrumentation and applications of the radio isotopic techniques.	**Global developmental needs**

Name of the Programme: PG Diploma in Human Resources Management

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	EMPLOYEE LEGISLATION	MSDH 221	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Human Resource Management.	• Illustrate the laws relating to Industrial Relations, Social Security and Working conditions and also learn the enquiry procedural and industrial discipline • Evaluate the role of trade union in the industrial setup • Explain the laws regarding Issues of wages, bonus and State Insurance. • Appraise the laws relating to Industrial Relations, Social Security and Working conditions • Comprehend the salient features of welfare and wage legislations also to integrate the knowledge of labour law in general HRD practice	**National /Global**

2	COMPENSATION AND BENEFITS	MSDH222	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Human Resource Management.	• Relate compensation management to behavioral theories and concepts and within the wider context of human resources management • Examine the factors of job analysis and job description as the basis of compensation strategy offering students an opportunity to develop competencies in making equitable compensation decisions • Describe the process and evaluate the implications of job evaluation • Analyze, integrate, and apply the knowledge to solve compensation related problems in organizations • Demonstrate an understanding of the process of designing a pay structure taking account of the company environment	**National/ Global**

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PG Diploma in Import and Export Management

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	BASICS OF EXPORT AND IMPORT	MSDI122	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Import Export Management.	• Acquire knowledge on the basic concepts and major components related to import and export arena • Enumerate basic procedure about import and export domain and make an appeal to apply in the business life • Analyze the export and exporters with regard to direct, indirect and categories of export • Develop and design the schemes and benefits of export promotion capital goods • Classify the import and export schemes and assess the India's	**Global developmental needs**

				foreign trade activities and movements	
2	INTERNATIONAL LOGISTICS AND SUPPLY CHAIN MANAGEMENT	MSDI123	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Import Export Management.	• Understand the fundamental concepts, importance, elements, logistics and marketing interface • Examine shipping transport and draw attention to apply it in the respective domain • Formulate the indispensable areas of air transport and make an idea to form a new module with regard to air transport • Outline supply chain domain and highlight its significant arena • Measure the forecasting and planning in supply chain management to identify the best roots	**Global developmental needs**
3	INTERNATIONAL ECONOMICS	MSDI124	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Import Export Management.	• Find and relate observe the concepts, significant, differences and indispensable elements with due respect to international economics • Appraise the important theories of international trade and economic development and inculcate to grasp technical skills towards international trade • Evaluate national economy using various factors and methods and	**Global developmental needs**

				- create an interest to assess and identify investment opportunities in international trade business - Classify the theories of international economies and understand nuances to apply in the real life of international trade - Discuss the international liquidity and world monetary system along with world trade organization, World Bank, Asian Development Bank, European Union to observe and find out the opportunities and challenges in the foreign trade.	
4	INTERNATIONAL FINANCE & FOREIGN EXCHANGE MANAGEMENT	MSDI221	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Import Export Management.	- Evaluate the key terms and concepts in export and import markets - Outline the importance and applications of foreign exchange - Formulate the key procedures in financing for international trade - Generalize the uses of foreign portfolio investments - Adapt the functions of India's Forex system	**Global developmental needs**

5	INTERNATIONAL MARKET RESEARCH	MSDI222	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Import Export Management.	- Understand the basics of international market research - Apply the methods and techniques of marketing research - Analyze and use the various methods of sampling and questionnaire appropriately - Evaluate the future trends by accurate data analysis and interpretation - Formulate the international market opportunities	**Global developmental needs**

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Name of the Programme: PG Diploma in Logistics Management (PGDLM)

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	TRANSPORTATION AND DISTRIBUTION MANAGEMENT	MSDL122	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Logistic and Supply Management.	• Apply the flow of goods, Ordering rules and Information transmittal methods. • Evaluate the different types of transportation and Insurance procedure to ship the goods. • Predict the scope and relationship of transportation with other business functions. • Model the network planning, routing and scheduling in transportation • Relate the applications of information technology in transportation and distribution management	**National/ Global**
2	LOGISTICS MANAGEMENT	MSDL124	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Logistic and Supply Management.	• Design network that denotes the number and location of production plants, storage houses, equipment for handling of materials in moving products with optimization of time and cost • Develop knowledge of risks associated and time utility by delivering goods at right time and in right order • Identify process and functions of logistics system and examine the	

				major building blocks, functions, business process, performance metrics and decision making in supply chain network. • Analyze to lower the transportation expenses by choosing efficient transportation source, planning of shortest route, freight consolidation and load unitizing in reducing the freight charges. • Adapt latest technologies in information processing and communications to enhance the decision-making capability in terms of accuracy and time, enabling the enterprise to be flexible enough to fulfil the customer requirements	**National/ Global**
3	SUPPLY CHAIN INVENTORY MANAGEMENT	MSDL222	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Logistic and Supply Management.	• Apply warehouse concepts, various inventory control techniques and application of inventory management in supply chain • Improve confident approach towards supply chain inventory issues • and they can use different tools appropriately to solve the problems • Evaluate various tools and	

				techniques in inventory management • Inspect the possibility of keeping extra stock, since the needs are predetermined, thus eliminating needless storage expenses. • Show various costs indulged with inventories like purchase cost, carrying a cost, storage cost, etc. and to keep material cost under control as they contribute to reducing the cost of production	**National/ Global**
4	PURCHASE AND INVENTORY MANAGEMENT	MSDL223	The basic objective of this course is to provide to the country a steady stream of competent young men & women with the necessary knowledge, skills and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Logistic and Supply Management.	• Determine reasonably low prices for the best values obtainable, negotiating and executing all company commitments. • Plan to keep inventories as low as is consistent with maintaining production. • Measure and constantly monitor inventory losses due to damage, deterioration or outdated features • Analyzing the materials in storage, handling, packaging, shipping distributing and standardizing • Understanding the potential risks and developing innovative strategies to manage them is an important aspect of purchasing and supply management	**National/ Global**

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Name of the Programme: PGDCS

1.	Fundamentals of Information Security	CADC101	• To learn the fundamentals of Cryptography and its applications. • To understand the types of malwares. • To learn the ethical issues in information security.	• Observe and Discuss the basic principles of security. • Observe and Apply the substitution and transposition methods. • Recognize and Compute symmetric ciphers • Tabulate and Compute Asymmetric ciphers • Observe , Discuss and Correlate the concept of digital signatures with security • Recognize and Express the structure of Public Key Interfaces. • Observe and Explain the basic concepts in Internet Security. • Observe and Use the Internet Security Protocols. • Recognize and Operate the User Authentication Methods. • Recognize and Assess the architecture of kerberos.	**global developmental needs**

2.	Cyber Forensics	CADC202	• To learn the basics of cyber forensics. • To understand the types of cyber forensic systems.	• Observe and Elicit the relevance of cyber forensics. • Observe, Recognize and Use methods to perform IR. • Draft and Develop systems capable of doing analysis and validation. • Discuss and Apply evidence collection and forensic tools. • Observe and Discuss the basics of network forensics. • Compare and Correlate various aspects of cyber forensics.	**global developmental needs**
3.	Application Cyber Security	CADC203	• To learn the concepts in application level cyber security. • To understand the concepts of ethical hacking and cyber laws. •	• Identify and analyze malicious code in the system and data base • Review and recognize Operating system security vulnerabilities • Understand the ethical hacking and computer forensics • Understand and Describe the Cyber Laws and standards • Perform security audit and assess • Plan, implement and monitor security breaches	**global developmental needs**

| 4. | Advanced Ethical Hacking | CADC205 | • To understand the basics of Ethical hacking.
• To learn the types of hacking and DDOS attacks.
• | • Outline and Elicit ethical considerations of hacking
• Outline and Apply legal considerations of hacking
• Execute, Analyze and Evaluate a penetration test using standard hacking tools in an ethical manner.
• Plan and Draft a vulnerability assessment and penetration test for a network
• Compare and Correlate on the strengths and vulnerabilities of the tested network
• Recognize and Identify legal and ethical issues related to vulnerability and penetration
• testing. | **global developmental needs** |
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Name of the Programme: PGDDS

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	Optimization Techniques	CADD101	- To understand the basics of optimization. - To learn about linear programming, randomized optimization and genetic algorithms.	- Generalize and Formulate linear programming problems. - Choose, Draft and Formulate transportation problems. - Classify and Design assignment problems. - Devise , Build and Design inventory models. - Elicit and Design queuing models - Define, Build and Formulate project manage ment and Game theory problems.	**global developmental needs**
2	Introduction to Data Science	CADD102	- To learning the founding principles of Datascience. - To learn Artifical intelligence concepts, searching and learning algorithms.	- Discover and Discuss the various technologies used in data science - Recognize and Elicit the founding principles of Data Science. - Identify, compare and correlate the Artificial intelligence concepts,	**national and global developmental needs**

				searching and learning algorithms.	
				• Identify and illustrate the methods and techniques commonly used in data science.	
				• Analyze and Evaluate how data analysis, inferential statistics, modeling, machine learning, and statistical computing can be utilized in an integrated capacity.	
				• Observe and Demonstrate the ability to clean and prepare data for analysis and assemble data from a variety of sources.	

| 3 | Introduction to Data warehouse and Data Mining | CADD103 | • To learn about the basics of Data warehouse and data mining.
• To understand clustering and web mining. | • Remember, Understand and explain the fundamentals of Data Warehouse and Data Mining
• Apply the concepts of association mining, clustering classification and Regression
• Analyze and choose a suitable data mining task for a specific problem and support the choice of approach adopted.
• Compare and Correlate the results various data mining techniques for a specific problem.
• Identify and Apply real-world problems in business and scientific information using data mining techniques

• Draft and Build statistical predictive models using various | **national and global developmental needs** |

				techniques such as neural networks, decision trees and logistic regression.	
4	Machine Learning	CADD20 2	• To learn the concepts of machine learning. • To understand association rules, classification and prediction techniques.	• Understand and Comprehend the Machine Learning Concepts • Identify the use cases of the supervised and unsupervised learning algorithms • Analyse the logic behind the execution of various classifiers • Compute and compare the performance of different algorithms for mining data	**global developmental needs**

				• Demonstrate and analyse the clustering methods • Propose solution for real word problems	
5	Deep Learning	CADD20 3	• To understand Linear Regression and Regularization. • To learn the concepts of Deep Learning and its applications.	• Observe and Apply the concepts of Deep Learning and its applications • Identify and Use the configuration of Deep Feed Forward Networks • Comparing and Correlating the Learning and Optimization Algorithms • Identify and Practice Regularization for Deep Learning • Observe and Discuss the concepts of Convolutional networks • Identify, Analyze and Evaluate the applications of Deep Learning	**l global developmental needs**

6	Technologies for Data Science	CADD20 4	• To understand the technologies in data science. • To learn the concetps of Hadoop, Map-Reduce, HIVE, SQOOP and PIG.	• Identify and Discover the various technologies used in Data Science • Recognize and Discuss Big Data and its analytics in the real world • Identify, Draft and Develop Big Data Solutions using Hadoop • List and Leverage Hadoop as a reliable, scalable MapReduce framework • Demonstrate and Install and interact the HIVE, SQOOP and PIG tools • Apply and Demonstrate the ability to clean and prepare data for analysis using HIVE, SQOOP and PIG tools	**global developmental needs**

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Name of the Programme: MSW (HRM)

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTRODUCTION TO SOCIAL WORK PROFESSION	MHR101T	• To enable students, understand the basic concepts of social work methods • To educate students the evolution, principles, values and dynamics involved in social work practice and develop in them the ability to work independently as a professional social worker • To outline the theories and models in social work, with the goal of improving the skills needed in students to become successful professional social workers in different settings	• Describe the concept of social work methods and understand social work as a tool for social change. • Illustrate the evolution, principles, values and dynamics involved in social work practice and develop the ability to work independently as a professional social worker • Analyze the theories and models in social work, with the goal of improving the skills needed to be a successful professional social worker in different settings • To create, evaluate and practice social work through the	**Global Developmental Needs**

			• To prepare students to create, evaluate and practice social work through the application of techniques, processes and methods. • To prepare students to perform social work in various settings. • • To develop the ability in students to critically analyze problems of society and the factors affecting them.	application of techniques, processes and methods. • To organize and conduct social work in various settings • Incorporate social work methods and influence societies on the ability to critically analyze problems and factors affecting them	
2	SOCIAL WORK PRACTICE WITH INDIVIDUAL S	MHR102T	• To empower students with basic concepts, methods and definitions of case work practice with individuals. • To Understand the principles, techniques, tools, theories, approaches and models involved in social case work. • To make students comprehend and practice the characteristics and ethics to maintain professional relationship during case work practice. • To develop the skill of report writing, recording, and presenting a case among the student. • To give a practical exposure to students by	• Gain knowledge, recognize, understand, explain, describe and illustrate the concepts and principles about primary methods of social work practice with individuals. • Understand, characterize, plan, outline and practice the stages of case work. • Acquire knowledge, justify, prioritize, focus, agree on techniques, tools, approaches, theories and decide models used in case work practice. • Adapt, integrate, perform, facilitate, fit, integrate, consider the functions of various settings to understand the practice of social case work in real time. • To Identify people with problems who are in need of case work and reflecting to their	**Global developmental needs**

			allowing them to identify clients and to gain experience in handling different problems by applying their theoretical knowledge. • To prepare students to understand the roles and functions of a case worker, by exposing them to different settings.	problems by helping them to solve their problems valuing their emotions. • Incorporate the case work methods and evaluate the issues of individuals, develop awareness and projects to solve individuals' problem.	
3	SOCIAL WORK PRACTICE WITH GROUPS	MHR103T	• To enable students, understand the basic concepts of social group work as a method of social work • To educate students the principles, values and dynamics involved in social group work practice and develop in them the ability to work independently as a professional Group Worker • To outline the concept of programme planning and recording in social group work, with the goal of improving the skills needed in students to become successful group workers in different settings • To prepare students to create, evaluate and practice group work through the application of techniques, processes and	• To enable students, understand the basic concepts of social group work as a method of social work • To educate students the principles, values and dynamics involved in social group work practice and develop in them the ability to work independently as a professional Group Worker • To outline the concept of programme planning and recording in social group work, with the goal of improving the skills needed in students to become successful group workers in different settings • To prepare students to create, evaluate and practice group work through the application of techniques, processes and methods. • To prepare students to perform social group work in various	**Global developmental needs**

			methods. • To prepare students to perform social group work in various settings. • To develop the ability in students to critically analyze problems of groups and the factors affecting them.	settings. • To develop the ability in students to critically analyze problems of groups and the factors affecting them.	
4	SOCIAL WORK PRACTICE WITH COMMUNITIE S	MHR104T	• To enable students, understand the basic concepts about the primary method of social work practice with communities. • To educate students the principles, values, approaches involved in social work practice with communities and develop in them the ability to work independently as a professional community organizer • To outline the concept of social action and community organization for sustainable development, with the goal of improving the skills needed in students to become successful community organizers • To prepare students to create, evaluate and practice community	• Describe and understand the concept about the primary method of social work practice with communities and as a tool for social change • Illustrate the principles, values, approaches involved in social work practice with communities and develop the ability to work independently as a professional community organizer. • Analyze the concept of social action and community organization for sustainable development, with the goal of improving the skills needed to be a successful community organizer • To create, evaluate and practice community organization through the application of techniques, processes and methods • To organize and conduct social work practice with communities in various settings	**Global developmental needs**

			organization through the application of techniques, processes and methods. • To prepare students to perform social work practice with communities in various settings. • To develop the ability in students to critically analyze problems of communities and the factors affecting them.	• Incorporate community organization methods and influence communities on the ability to critically analyze problems and factors affecting them	
5	HUMAN PSYCHOLOY	MHR105T	• To enable students, understand the basic concepts of psychology and its relevance to social work • To educate students the areas of human development involved in human psychology and develop in them the ability to identify the factors influencing human behaviors • To outline the psychological processes in human behavior, with the goal of improving the skills of using psychological testing tools in dealing with individuals • To prepare students to create, evaluate and practice the knowledge of psychology through the application of techniques,	• Describe and understand the concept of psychology and its relevance to social work • Illustrate the areas of human development involved in human psychology and develop the ability to identify the factors influencing human behaviors • Analyze the psychological processes in human behavior, with the goal of improving the skills of using psychological testing tools in dealing with individuals • To create, evaluate and practice the knowledge of psychology through the application of techniques, processes and methods • To organize and conduct the intervention methods of psychology in various settings • Incorporate psychological methods and influence	**Global developmental needs**

				• To prepare students to perform the intervention methods of psychology in various settings • To develop the ability in students to critically analyze the various personalities in the societies and the factors affecting them	processes and theories individuals on the ability to critically analyze various personalities and factors affecting them	
6	SOCIAL WORK RESEARCH AND STATISTICS	MHR203T	• To enable students, understand the basic concepts of social science research as a method of social work • To educate students the scientific attitude, principles, values and processes involved in social work research and develop in them the ability to research independently as a professional • To outline the concept of research design, measurements and methods in social work research, with the goal of improving the skills of adopting the methodology and the application of statistics • To prepare students to create, evaluate and practice social work research through the	• Describe and understand the concept of social science research as a method of social work and as a tool for social change • Illustrate the scientific attitude, principles, values and processes involved in social work research and develop in them the ability to research independently as a professional • Analyze the concept of research design, measurements and methods in social work research, with the goal of improving the skills of adopting the methodology and the application of statistics • To create, evaluate and practice social work research through the application of designs, scales, techniques, processes and statistics • To organize and conduct social work research in various	**Global developmental needs**

| | | | application of designs, scales, techniques, processes and statistics
• To prepare students to perform social work research in various settings
To develop the ability in students to critically analyze problems of society through research and the factors affecting them | settings
Incorporate social work research processes and designs and influence societies on the ability to critically analyze problems and factors affecting them | |