

Name of the Programme: B.A Economics

Programme Outcomes at Undergraduate Level

Undergraduates will be able to	
PO1	Discuss their new knowledge and understanding; apply new ideas in - order to acquire employability/self-employment
PO2	Pursue higher learning programmes and become entrepreneurs
PO3	Recognize moral and ethical values and be socially responsible citizens in the society
PO4	Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
PO5	Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings
PO6	Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
PO7	Demonstrate communication skills both oral and written in personal and academic pursuits.

Programme Specific Outcomes at Undergraduate Level

PSO1	Demonstrate different principles and theories subject to obtain employment.
PSO2	Equip various skills with basic quantitative techniques.
PSO3	Appraise as a responsible citizen incorporating social, ethical and moral values.
PSO4	Holistic development in self-study, virtual learning and development.
PSO5	Develop the analytical skills in the field of social and physical sciences.
PSO6	Pursue higher learning programmes and become entrepreneurs.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
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1	ECONOMIC THOUGHT	E120	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	National and Global developmental needs
2	STATISTICS FOR ECONOMICS	E121	<ul style="list-style-type: none"> • To learn relevant statistical concepts related to Economics. • To gain knowledge about importance of variability. • To understand the theory and practice of bivariate analysis. • To know the concepts and techniques of regression analysis. • To measure the changes in group of related variables using index numbers. 	<ul style="list-style-type: none"> • Understanding the different fundamental statistical methods. • Comparing various measures of dispersion. • Applying bivariate methods to real world problems. • Analysing the regression in the business and corporate field. • Constructing indexes to measure price changes and quantity changes. 	national and global developmental needs
3	MICRO ECONOMICS – I	E218	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	national and global developmental needs

			costs and revenues.	<ul style="list-style-type: none"> Appraising traditional and modern theories of costs and Revenues. 	
4	MATHEMATICS FOR ECONOMICS	E219	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	national and global developmental needs
5	PRINCIPLES OF ECONOMICS - I	AE106	<ul style="list-style-type: none"> 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 behaviour in business strategies. To imparting knowledge about market structures. 	<ul style="list-style-type: none"> Gaining knowledge of the basic economic principles. Applying traditional utility analysis in business. Analysing consumer behaviour in modern business situations. Appraising producer behaviour in modern business. Evaluating the role of time and competitions in market. 	national and global developmental needs
6	PRINCIPLES OF ECONOMICS - II	AE206	<ul style="list-style-type: none"> To understand demand forecasting methods. To study national income concepts. To laying down the foundation of 	<ul style="list-style-type: none"> Acquiring knowledge in demand forecasting for Business solutions. Enabling to understand macro economic variables. Exploring the financial system of 	national and global developmental needs

			<p>theory of public finance</p> <ul style="list-style-type: none"> To acquire knowledge on monetary policies and Indian economic system in India. To explore about the Indian economic issues on sectors in Indian economy. 	<p>Indian economy.</p> <ul style="list-style-type: none"> 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. 	
7	MICRO ECONOMICS – II	E317	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	national and global developmental needs
8	MACRO ECONOMICS – I	E318	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	national and global developmental needs
9	MACRO ECONOMICS – II	E419	<ul style="list-style-type: none"> To study the working of IS-LM. To learn the concepts and theories of inflation and deflation. To understand the theories of trade cycle. 	<ul style="list-style-type: none"> Understanding the general equilibrium analysis. Examining the theories of inflation and deflation Assessing the theories of trade cycle. 	national and global developmental needs

			<ul style="list-style-type: none"> To study various economic growth models. To know the monetary and fiscal policy 	<ul style="list-style-type: none"> Familiarizing with growth theories. Gaining an overview of monetary and fiscal policies 	
10	INDUSTRIAL ECONOMICS	E420	<ul style="list-style-type: none"> To understand the basic concepts in Industrial Economics. To learn the theories in Industrial location, mergers, and SEZs. To know the classification of Indian industries and its productivity. To analyze the sources of industrial financial institutions. To evaluate the performance of industrial development. 	<ul style="list-style-type: none"> Working with Industrial linkages. Familiarizing the theories of Industrial location, mergers, and SEZs. Differentiating the Indian industries and its productivity. Exploring the sources of industrial financial institutions. Appraising the industrial dynamics, and its regulations. 	local, regional,national developmental needs
11	MANAGERIAL ECONOMICS	AE305	<ul style="list-style-type: none"> To learn the basic tools in managerial economics. To understand the importance of cost and revenue analysis. To disseminate the different pricing strategies. To study the importance of factors of production. To know the different methods of capital budgeting. 	<ul style="list-style-type: none"> Identifying the basic tools of managerial economics. Computing different kinds of cost and revenue. Analysing the different methods of pricing. Evaluating the production function. Formulating different methods of capital budgeting. 	regional, national and global developmental needs
12	INTERNATIONAL ECONOMICS	AE405	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	national and global developmental needs

			financial institutions.	institutions	
13	INTERNATIONAL ECONOMICS	E543	<ul style="list-style-type: none"> 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 and foreign capital. To know international financial institutions to promote international trade. 	<ul style="list-style-type: none"> 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 Appraising the international financial institutions. 	national and global developmental needs
14	FISCAL ECONOMICS – I	E544	<ul style="list-style-type: none"> To know the fiscal activities of the State. To study the public expenditure pattern. To learn the source of public revenue and tax system. To understand the process of Goods and Services Tax (GST). To enable the measurement of taxable capacity. 	<ul style="list-style-type: none"> Familiarizing on fiscal finance. Expertizing on pattern of public expenditure. Inculcating the habit of becoming an honest tax payer. Appraising Goods and Services Tax in India. Evaluating the taxable capacity. 	local, regional ,national developmental needs
15	INDIAN ECONOMY	E545	<ul style="list-style-type: none"> To understand the Indian economic activities. To learn the planning for economic growth and development. To study the working of agricultural sector. To know the functions of industrial and services sectors. To understand the emerging 	<ul style="list-style-type: none"> Familiarizing the structure and characteristics of Indian Economy. Applying economic planning for growth and development. Analyzing the working of Agricultural sector. Evaluating the operations of industrial and services sectors. Justifying the emerging issues in India. 	local, regional ,national developmental needs

			issues of Indian economy.		
16	MONETARY ECONOMICS – I	E546	<ul style="list-style-type: none"> To understand the functions of money. To know the monetary standards. To learn the Indian Banking System. To study the operation of the Central Bank. To learn the operations of the commercial banks. 	<ul style="list-style-type: none"> Describing the importance of money Inferring the Indian monetary standards. Practicing the regulations of Indian Banking System. Experimenting the operation of Central Banking system. Evaluating the operations of commercial banks. 	regional and national developmental needs
17	ELECTIVE:1 MANAGERIAL ECONOMICS	E547A	<ul style="list-style-type: none"> To study the basics of managerial economics. 2. To understand the concepts of cost and revenue. 3. To study different pricing strategies. 4. To learn the demand forecasting. 5. To know the investment proposals. 	<ul style="list-style-type: none"> Identifying the different aspects of managerial economics. Relating the cost and revenue analysis. Applying the different pricing strategies in business. Predicting different methods to demand forecasting. Estimating capital budgeting in business. 	regional and national developmental needs
18	ELECTIVE:2 BASIC ECONOMETRICS	E547B	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. 	national and global developmental needs
19	ELECTIVE:3 HUMAN RESOURCE MANAGEMENT	E547C	<ul style="list-style-type: none"> To understand the basic concepts of Human Resource Management. To know Human resource planning. 	<ul style="list-style-type: none"> Familiarizing the functions of Human Resource Management. Applying human resource planning and job design. Analyzing the process of 	regional, national and global developmental needs

			<ul style="list-style-type: none"> • To study the process of recruitment, selection and placement. • To learn the training, induction and socialization in human resource management. • To study the methods of virtual organization. 	<p>recruitment, selection and placement.</p> <ul style="list-style-type: none"> • Evaluating HR training, induction and socialization. • Incorporating the knowledge of virtual organization. 	
20	NON-MAJOR ELECTIVE – I: BASIC ECONOMICS	NEC504	<ul style="list-style-type: none"> • To study the basic concepts of economics. • To understand the macro economic variables. • To know the managerial terms of economics. • To learn the basics of money and banking. • To understand the fiscal system of Indian economy. 	<ul style="list-style-type: none"> • Recognizing the business operations with basic economic variables. • Elucidating the macroeconomic variables. • Familiarizing with managerial concepts. • Exploring the concepts of demand and supply of money. • Evaluating the government financial activities. 	national and global developmental needs
21	ENVIRONMENTAL ECONOMICS	E643	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	local, regional, national and global developmental needs
22	MONETARY ECONOMICS – II	E644	<ul style="list-style-type: none"> • To understand the Indian currency system. • To study the theories of demand and supply of money. • To learn the different quantity 	<ul style="list-style-type: none"> • Knowing the evolution of the Indian currency system. • Familiarizing the theories of supply and demand for money. • Analysing different quantity 	regional and national developmental needs

			<p>theories of money.</p> <ul style="list-style-type: none"> To know the operation of different money markets. To know the working of the International Financial Institutions. 	<p>theories of money.</p> <ul style="list-style-type: none"> Appraising the operation of different money markets. Evaluating international monetary institutions and its operations. 	
23	FISCAL ECONOMICS – II	E645	<ul style="list-style-type: none"> To study the Public debt management in India. To know the resource sharing between the Governments. To understand the role of deficit financing. To learn the public budgetary procedure. To study the fiscal policy in India. 	<ul style="list-style-type: none"> Familiarizing the process of Public debt management in India. Knowing the functions of federal and local finance. Creating awareness to reduce deficit Finance in India. Analysing the Public Budget for economic and social development. Assessing the fiscal policy of India. 	local, regional and national developmental needs
24	SUBJECT SKILL: FINANCIAL ECONOMICS	E646	<ul style="list-style-type: none"> To know the process of financial economics. To study the sources of short term finance To understand the sources of long term finance To learn the operations of capital market. To study the different methods of capital budgeting. 	<ul style="list-style-type: none"> Familiarizing the structure of financial economics Explaining the sources of short term finance Analysing the sources of long term finance. Assessing the operations of financial market. Appraising the methods of capital budgeting. 	Regional and national developmental needs
25	SUBJECT SKILL: BASIC COMPUTER AND ITS APPLICATION	E647	<ul style="list-style-type: none"> To understand basic concepts of research process and its Methodologies and to select appropriate research problem and parameters. To select suitable research and sampling design. To organize and conduct research in a more appropriate manner. To enhance the application 	<ul style="list-style-type: none"> Demonstrate knowledge of research processes (reading, evaluating, and developing) Define and develop a possible research design in a interest area using specific research designs Compare and contrast quantitative and qualitative research paradigms in describing sampling methods, measurement scales and 	national and global developmental needs

			<p>knowledge to test the hypothesis.</p> <ul style="list-style-type: none"> To improve the skill of write a research report and thesis 	<p>instruments, and appropriate uses of each scales.</p> <ul style="list-style-type: none"> Describe, compare, and contrast descriptive and inferential statistics and provide application knowledge Expertise in drafting the research report and thesis. 	
26	<p>NON-MAJOR ELECTIVE – II: INDIAN ECONOMY: BASIC ISSUES</p>	NEC604	<ul style="list-style-type: none"> To study basic ideas of economic systems. To understand the issues of Indian agriculture. To know the major issues faced by the Indian industries. To learn the roles and responsibilities of the service sector. To know the major issues affecting the Indian economy. 	<ul style="list-style-type: none"> Familiarizing the different economic systems. Describing emerging issues in agriculture Analyzing the recent issues in Industrial sector Evaluating the contribution of service sector Assessing the emerging issues in Indian economy. 	<p>local, regional ,national developmental needs</p>

Name of the Programme: M.A Economics

Programme Outcomes at Postgraduate Level

PO1	Demonstrate advanced knowledge in their disciplines.
PO2	Develop specialized skills to plan, analyze and draw conclusions in their field of study.
PO3	Exhibit and expertise in their field of study through project and research activities.
PO4	Prepare them to incorporate new techniques in their own discipline and demonstrate excellence in their area of specialization.
PO5	Develop social and ethical responsibility in the transfer and management of knowledge.
PO6	Equip them to face the job market and to become entrepreneurs.

Programme Specific Outcomes at Postgraduate Level

PSO1	Pursue various advanced economic theories into diverse empirical fields.
PSO2	Concede contemporary economic concepts pertaining to discipline of economics.
PSO3	Demonstrate and impart knowledge on structure and distribution of the economy.
PSO4	Create critical thinking and social responsibility among the students.
PSO5	Compare and contrast environmental values, consciousness and making policy analysis
PSO6	Take up careers, research and employability skills in different sectors.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ADVANCED MICRO ECONOMIC THEORY – I	E748	<ul style="list-style-type: none"> To learn understand micro economic theories and models. To study traditional demand theories and its functions. To understand modern demand 	<ul style="list-style-type: none"> Understanding economics models and methodologies. Applying traditional demand theories in business. Analysing modern demand 	national and global developmental needs

			<p>theories and its functions.</p> <ul style="list-style-type: none"> • To demonstrate costs and production functions. • To evaluate and use the various game theory model. 	<p>theories in business.</p> <ul style="list-style-type: none"> • Evaluating cost and Production functions. • Constructing game theory models in business. 	
2	ADVANCED MACRO ECONOMIC THEORY – I	E749	<ul style="list-style-type: none"> • 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. • To evaluate ISLM functions. 	<ul style="list-style-type: none"> • 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. • Evaluating the effectiveness of ISLM functions. 	national and global developmental needs
3	STATISTICS FOR ECONOMICS	E750	<ul style="list-style-type: none"> • To learn about probability, distributions and random variables. • To study various parameters of sampling and population. • To understand various methods of estimation. • To demonstrate the various sampling techniques and time series analysis. • To evaluate the validity and reliability of the co-variation. 	<ul style="list-style-type: none"> • Comparing theories of probability and distribution • Understanding the sampling methods with statistical inference. • Analysing the least square methods and confidence interval estimates. • Applying different sampling techniques in Social Science Research. • Evaluate and develop the regression model in economic 	national and global developmental needs

				application.	
4	ECONOMICS OF GROWTH AND DEVELOPMENT	E751	<ul style="list-style-type: none"> To learn understand the concepts of economic growth and development. To study the theories of economic growth and development. To understand different growth models. To demonstrate different measurement of economic development To evaluate various policies for economic development. 	<ul style="list-style-type: none"> Classifying various concepts of economic growth and development. Comparing the theories of economic growth and development. Categorizing various models of growth and development. Analysing the measurement of economic development. Evaluating various policies for economic development. 	national developmental needs
5	ELECTIVE -I DEMOGRAPHY	E752A	<ul style="list-style-type: none"> To learn the population growth and economic developed in developing countries. To study the concepts of demography and the vital statistical indicators. . To understand the population census to frame the suitable Government policies. To demonstrate the techniques of population projection., To evaluate the new population policy and its implementations for development strategy. 	<ul style="list-style-type: none"> Classifying population and economic growth in developing and developed countries. Comparing demography and vital statistics. Applying diverse techniques in measurement of population studies. Analyzing the measurement of population projection and aging population. Evaluating different new population policies for growth and development. 	local, regional, national and global developmental needs
6	ELECTIVE I: HISTORY OF ECONOMIC	E752B	<ul style="list-style-type: none"> To learn understand the context of socialistic ideas. To study the ideas of different 	<ul style="list-style-type: none"> Practicing socialistic ideas of St. Simon, Sismondi, Robert Owen and Karl Marx in 	national and global developmental needs

	THOUGHT		<p>marginalist schools.</p> <ul style="list-style-type: none"> • 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. 	<p>economic world today.</p> <ul style="list-style-type: none"> • 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 relation to the economic world today. 	
7	ELECTIVE I: ECONOMICS OF INFRASTRUCTUR E	E752C	<ul style="list-style-type: none"> • To learn understand the basic concepts of public utility services. • To study social physical infrastructural theories. • To understand the health care services and new education. • To demonstrate the basic amenities and pricing policy in rural and urban areas. • 5. To evaluate different forms of social infrastructural services. 	<ul style="list-style-type: none"> • Relating the basic public utility services. • Applying the different public utility services and its development. • Analysing the demand and supply of health care and educational services. • Examining the basic utility services and pricing. • Constructing the social infrastructural services. 	local, regional, national and global developmental needs
8	SKILL PAPER: BUSINESS	E753S	<ul style="list-style-type: none"> • To learn the importance of the communication process. 	<ul style="list-style-type: none"> • Identifying the importance of the communication process. 	national and global

	COMMUNICATION SKILLS		<ul style="list-style-type: none"> To study the different business communication skills. To understand the oral and presentation skills. To demonstrate the personal and business letters. To evaluate the internal and external communications. 	<ul style="list-style-type: none"> Distinguishing the different business communication skills. Applying the oral and presentation skills. Assessing the personal, business letters. Practicing the internal and external communications. 	developmental needs
9	ADVANCED MICRO ECONOMIC THEORY-II	E855	<ul style="list-style-type: none"> 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 under imperfect market structure. 5. To evaluate knowledge on general equilibrium and welfare economics. 	<ul style="list-style-type: none"> Understanding the relevance of perfect market structure. Comparing the nature of imperfect market structure. Analysing the factor pricing in perfect competitive market. Examining the trade union and rent theories Evaluating the general equilibrium theory and welfare economics. 	national and global developmental needs
10	ADVANCED MACRO ECONOMIC THEORY – II	E856	<ul style="list-style-type: none"> To learn economic fluctuations and its related theories. To study about policy measures to control trade cycle. To understand macroeconomic policies in present scenario. To demonstrate in decision making to achieve desired economic goals. To evaluate understand macroeconomic policies. 	<ul style="list-style-type: none"> Understanding about economic fluctuations. Applying policy measures to control trade cycle. Expertizing in principles of macroeconomics. Evaluating modern macroeconomic theories and policies. Creating macroeconomic variables at national and global level. 	national and global developmental needs

11	MATHEMATICS FOR ECONOMISTS	E857	<ul style="list-style-type: none"> To learn matrices and its different components. To study differentiation with various economic theories. To understand the strategies of game theory. To demonstrate about input-output analysis. To evaluate about the integration calculus. 	<ul style="list-style-type: none"> Illustrating of matrices in various economic methods. Expertising of differentiation on diverse economic theories. Constructing of game theory models with business strategy. Evaluating the input-output models. Composing of integral calculus in economic theories. 	national and global developmental needs
12	MANAGERIAL ECONOMICS	E858	<ul style="list-style-type: none"> To learn enhance managerial principles with business activities. To study the theoretical knowledge towards firm. To understand the pricing practices in managerial aspect. To demonstrate about the project analysis. To evaluate the techniques of investment appraisal. 	<ul style="list-style-type: none"> Understanding the different managerial principles in business. Practicing behavioral theories in decision-making. Implying pricing practices. Analysing the risk and uncertainty situation. Assessing sales promotion strategies and investment appraisal. 	national and global developmental needs
13	ELECTIVE II: INDUSTRIAL ECONOMICS	E859A	<ul style="list-style-type: none"> To learn the fundamentals of Industrial Economics. To study different theories in Industrial location. To understand Indian industrial growth and pattern. To demonstrate industrial labour legislation and labour market. To evaluate industrial concentration and its 	<ul style="list-style-type: none"> Understanding the fundamental ideas in Industrial Economics. Applying different theories of Industrial location. Comparing the Indian industrial growth and pattern. Appraising of industrial labour legislation and labour market. Assessing the industrial 	regional, national and global developmental needs

			diversification.	concentration and analyze the diversification.	
14	ELECTIVE II: ECONOMICS OF URBANISATION	E859B	<ul style="list-style-type: none"> To learn the structure of urban economics. To study the theories of urban economics. To understand the trends in urban housing and labour market. To demonstrate about the problems of urbanisation. To evaluate the modern approach of growth strategies. 	<ul style="list-style-type: none"> Understanding the nature and structure of urban economics. Examining the theoretical knowledge of urban economics. Applying suitable policies in upgrading the structure of urbanization. Assessing appropriate policies in urbanization problems. Evaluating the government policies on various aspects of urban development. 	local, regional, national developmental needs
15	ELECTIVE II: ECONOMICS OF GENDER AND DEVELOPMENT	E859C	<ul style="list-style-type: none"> To learn feminist economics and challenges. To study the importance of women and labour market. To understand the role of technology for women empowerment. To demonstrate social security and gender policies. To evaluate gender and the relevance of different policy. 	<ul style="list-style-type: none"> Understanding the concepts of gender economics and its challenges. Identifying the nature of labour market for women Applying gender relations for developmental process. Apprising social security and protection measures for women. Creating ideas about the different gender policies. 	local, regional, national and global developmental needs
16	ENTREPRENEURS HIP TRAINING SKILLS	E860S	<ul style="list-style-type: none"> To learn the importance of entrepreneurship for economic development. To study personal creativity and entrepreneurial initiatives. 	<ul style="list-style-type: none"> Understanding the resources for business enterprise. Organising programs to develop the entrepreneurial activities. 	Local and regional, developmental needs

			<ul style="list-style-type: none"> • To understand business ideas for the project appraisal. • To demonstrate marketing strategies and institutional finance. • To evaluate the various benefits of small scale industry. 	<ul style="list-style-type: none"> • Preparing business project proposals for new business. • Applying industrial finance for marketing. • Creating innovative ideas for new business initiatives. 	
17	INTERNATIONAL TRADE	E940	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Able to learn the traditional and modern theories 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 policy framework and better understanding of various export promotion measures. 	national and global developmental needs
18	PUBLIC ECONOMICS	E941	<ul style="list-style-type: none"> • To understand the concepts of public finance and provisions of social goods. • To enable them to understand different tax theories. • To study the effects of public expenditure and public debt. • To study about the preparation of 	<ul style="list-style-type: none"> • Using the basic tools, concepts and models to solve problems in key areas of public Economics • Analysing the different theories of taxation and challenges facing by the governments. 	Regional and national developmental needs

			<p>the budget statement.</p> <ul style="list-style-type: none"> • 5. To understand the functions of finance commission in India. 	<ul style="list-style-type: none"> • Knowing the causes and growth of public expenditure and debt in India • Providing guidelines to prepare the budget for state and local governments. • Estimating the different tax was distributed to the state and the local government 	
19	MONETARY ECONOMICS	E942	<ul style="list-style-type: none"> • To enable the students of economics to understand theories and practices monetary economics. • To analyse the interconnection between the classical and neo classical theories on money. • To shaping and influencing the monetary related policies. • To focus on the Money and Assets relationships in economic activities • To know the due relevancies of risk – return theory in every business activity of Industrialists and life of human beings 	<ul style="list-style-type: none"> • Developing monetary theory, to the effects of monetary variables on the macroeconomic system. • Understanding the theories of both classic and neo-classic theoretical conditions. • Learning the monetary policies undertake by the central government and the recent financial reforms. • Making the students to realize the importance of time factor in every human activity • Inducing the students to analyze the banking and the financial operations and activities in all fields’ developments. 	national and global developmental needs
20	RESEARCH METHODOLOGY	E943	<ul style="list-style-type: none"> • To understand basic concepts of research Methodology. • To select suitable research and sampling design. 	<ul style="list-style-type: none"> • Demonstrating the knowledge of research processes. • Developing research design in using specific research. 	national and global developmental needs

			<ul style="list-style-type: none"> • To organize and conduct research in a more appropriate manner. • To enhance the application knowledge to test the hypothesis. • To improve the skill of writing research report and thesis. 	<ul style="list-style-type: none"> • Compare quantitative and qualitative research paradigms in describing sampling methods, measurement scales and instruments, and appropriate uses of each 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. 	
21	ECONOMETRICS METHODS	E944A	<ul style="list-style-type: none"> • To understand the nature and scope of econometrics and the underlying problems related to econometric analysis. • To learn the application of regression analysis and usage of dummy variables. • 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. 	<ul style="list-style-type: none"> • 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. 	national and global developmental needs

22	HEALTH ECONOMICS (ELECTIVE OPTIONAL)	E944B	<ul style="list-style-type: none"> • To apply economic concepts and to analyze issues in health and health care systems. • To accumulate choices of the production efficiency in health care. • To identify the supply and cost benefits in health care services. • To understand the principles and techniques of economic evaluation of health interventions. • To analyze health policy issues within the Indian context. 	<ul style="list-style-type: none"> • Understanding the economic approach and analyzing social issues. • Identifying the inputs and output sources of production in health care. • Learning the needs for health care services. • Evaluating the economic benefits in health care. • Analyzing the efficiency and quality of health care organizations. • Describing the rationale for performing economic evaluation and the economic principles in health care. 	regional, national and global developmental needs
23	PERSONNEL MANAGEMENT (ELECTIVE OPTIONAL)	E944C	<ul style="list-style-type: none"> • To develop an understanding of the personal management. • To understand the various aspects of human resource management. • To know about the various recruitment and selection process in the industries. • To know more about the selection, induction and socialization process in HRM. • To understand the virtual organization in personnel management. 	<ul style="list-style-type: none"> • Applying personnel management concepts in to industries. • Investigating different personnel management problems. • Executing the human resource planning for the betterment of the organization. • Applying the knowledge on recruitment, selection, placement, motivation, training and induction in HRM process. • Working efficiently and innovatively in virtual platform 	national and global developmental needs

				for the development of the organization.	
24	DATA ANALYSIS AND INTERPRETATION	E945S	<ul style="list-style-type: none"> • To provide knowledge on Econometric tools and their applications. • To learn basic programming languages that is useful for econometric analysis. • To learn the use of Models and interpret data in the presence of research problems. • To provide knowledge of how to graph and display the results of programming. • To enable the students to access SPSS software in applying economic research. 	<ul style="list-style-type: none"> • Expertising in doing econometric analysis and tools for conducting research studies. • Understanding of Interpret the estimates of econometric models. • Evaluating results to graph and display the results of programming. • Enabling the students to learn the technique of estimating Econometric Models • Training to apply basic econometric techniques like correlation and regression. 	national and global developmental needs
25	INDIAN ECONOMY: ISSUES AND POLICY	E1039	<ul style="list-style-type: none"> • To study the basic characteristics of economic development and economic growth. • To realize the causes and measures of poverty inequalities and unemployment. • To study the agriculture and industrial development trends in India. • To examine the necessity of financial systems in India • To evaluate the trade policies of India 	<ul style="list-style-type: none"> • Learning recent economic affairs and development schemes in India. • Understanding various economic issues at local, national and global level. • Discussing the development of agriculture and industry. • Evaluating the position of financial sectors of Indian economy • Elucidating the trade and development of our state. 	regional, national developmental needs

26	ENVIRONMENTAL ECONOMICS	E1040	<ul style="list-style-type: none"> • 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. • 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. 	<ul style="list-style-type: none"> • 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 instruments for controlling pollution by using theories. • Using or Applying different methods for valuing environmental goods and services. • Taking up contemporary environmental discourse from an economists' point of view. 	regional, national and global developmental needs
27	INDIAN PUBLIC FINANCE (ELECTIVE OPTIONAL)	E1041A	<ul style="list-style-type: none"> • To motivate the students about functioning of finance commission in India • To understand the relationship between central, state and local finance. • To know about Indian tax system • To create knowledge about public expenditure and public debt in 	<ul style="list-style-type: none"> • Knowing the constitutions regarding financial powers between central and state governments. • Understanding the students about the tax system in India • Calculating GST in different product • Estimating the growth of 	regional, national developmental needs

			<p>India.</p> <ul style="list-style-type: none"> To Study deficit finance and its impact in India 	<p>public expenditure and debt in India</p> <ul style="list-style-type: none"> Enabling the students to understand the sources of central, state and local finance. 	
28	TAMIL NADU ECONOMIC DEVELOPMENT (ELECTIVE OPTIONAL)	E1041B	<ul style="list-style-type: none"> To know about the natural resources of Tamil Nadu. To understand the current situation of different sectors of Tamil Nadu economy. To understand the performance of various sectors operating in Tamil Nadu. To analyze the various welfare schemes in the developmental process of Tamil Nadu. To understand more of State Planning Commission. 	<ul style="list-style-type: none"> Becoming more effective in understanding about Tamil Nadu Economy. Knowing the current situation of sectoral composition of Tamil Nadu Economy. Analyse the performance of different sectors of Tamil Nadu Economy Getting knowledge about policy analysis with regard to Tamil Nadu Economy Gaining ability to compare and analyze Tamil Nadu Economy with rest of the country 	Local and regional developmental needs
29	FINANCIAL INSTITUTIONS AND MARKETS (ELECTIVE OPTIONAL)	E1041C	<ul style="list-style-type: none"> To familiarize the students with the structure and composition of the financial system. To explain the concepts of Interest rates in the monetary system To understand the quantitative and qualitative tools of monetary policy. To identify the non-banking financial intermediaries activities. To facilitate an understanding of the functioning of the money and 	<ul style="list-style-type: none"> Acquiring knowledge of financial institutions. Analysing the structure of interest rates in the monetary system. Acquiring the policies implementing on central commercial banks. Learning the nature of financial instruments on banking and non-banking financial intermediaries. 	national and global developmental needs

			capital markets in an economy.	<ul style="list-style-type: none"> Understanding the conceptual framework of financial market and institutions of India. 	
30	LABOUR ECONOMICS AND INDUSTRIAL RELATIONS	E1042A	<ul style="list-style-type: none"> To learn the theoretical and empirical aspects of labour markets. To understand the labour law and its practices. To study the role of labour and their relations in industries. To provide the students a foundation of knowledge of organizations. To make students aware of various aspects of social security. 	<ul style="list-style-type: none"> Enabling the students to labour relations in urban and rural settings under capitalism. Developing the ability to analyze labour policy related issues in labour economics. Understanding the acquisition of education as an investment for the labour supply. Familiaring the students with important labour legislations in India. Expertising to the empirical analysis of contemporary issues in labour economics. 	regional, national and global developmental needs
31	SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT	E1042B	<ul style="list-style-type: none"> To familiarize with the importance of financial market. To study portfolio management with low level of risk. To disseminate with risk and return. To know about the diversification of business. To illuminate the management analysis, financial analysis and operating analysis. 	<ul style="list-style-type: none"> Observe and annotate money, bond markets counter trading and clearing Listen and explain the portfolio construction, diversification and capital market theory Generalize and elicit risk and return investment avenues, portfolio management Articulate and categorize risk premium, market portfolio, and expected return Justify environment analysis, 	national and global developmental needs

				company analysis, and management analysis	
32	CO-OPERATION AND RURAL DEVELOPMENT (ELECTIVE OPTIONAL)	E1042C	<ul style="list-style-type: none"> • To understand the concept of cooperation and its origin. • To acquire knowledge of international cooperative movements and its growth. • To understand the role agriculture in rural development. • To acquire knowledge about financial institutions in rural development. • To understand the role of Government in rural development programs. 	<ul style="list-style-type: none"> • Understanding the history and growth of cooperation in India • Acquiring knowledge of cooperative movement in international level • Understanding the agricultural policy, taxation and rural development • Familiarizing with NABARD, RRBs and SHGs in rural development • Knowing the food for work program, rural credit institutions and rural development programs of Government of India. 	Local and regional developmental needs

Name of the Programme: B. Com

Programme Outcomes at Undergraduate Level

Undergraduates will be able to:

- Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment.
- Pursue higher learning programmes and become entrepreneurs.
- Recognize moral and ethical values and be socially responsible citizens in the society.
- Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
- Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings.
- Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
- Demonstrate communication skills both oral and written in personal and academic pursuits

Programme Specific Outcomes

- Acquire skills like effective communication, decision making, problem solving in day to day business activities to fit in any job.
- Pursue Professional Courses like CA, CS, CMA and so on. Also learners will be able to prove proficiency with the ability to engage in such courses.
- Recognize the role of business executives, entrepreneurs, policy makers and other stakeholders in the economic development of the nation and to contribute effectively to nation building.
- Identify business opportunities, evaluate them and set up their own business ventures.

- Actively pursue a post-graduation course with a specialization that would match their interest.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	PRINCIPLES OF ACCOUNTANCY	C116	<ul style="list-style-type: none"> • To understand the conventions, rules and procedures of accepted Accounting Practices. • To impart skills for recording various kinds of business transactions in the books of accounts. • To equip the students to ascertain the business results. • To learn the techniques of accounting relating to Bills of Exchange • To learn the calculation procedures involved in Account Current and Average Due Date. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Apply the basic principles of financial accounting and write up the accounts of a sole trading concern. • Rectify the book-keeping errors and to resolve the differences between pass book and cash book balances. • Ascertain the Profit or Loss of the Business and the Financial Position of the Business. • Understand the meaning of Bills of Exchange and the treatments relating to Bills of Exchange Transactions. • Understand the calculation procedures relating to Accounting Current and Average Due Date. 	National

2	ENVIRONMENTAL ASPECTS OF BUSINESS	C117	<ul style="list-style-type: none"> • To make the students to acquire basic knowledge about the business environment • To impart knowledge on the various environmental aspects in the midst of which a business has to be organized. • To enable the students to understand the difference between Money market and Capital Market • To expose students to Money Market, Capital Market, Stock Exchange and SEBI • To create awareness on various ethical issues in business and consumer rights. 	<ul style="list-style-type: none"> • Students will acquire the basic knowledge of business environment • The students will know the various internal and external factors influencing a business concern. • The students will know the importance of different financial markets and understand their functioning. • Students will know various aspects of stock market and motivates them to acquire knowledge on stock market investment • The students will be able to evaluate the ethical considerations in operation of business enterprises. They will also know the rights and duties of consumers 	National
3	FINANCIAL ACCOUNTING I	C216	<ul style="list-style-type: none"> • To prepare the students to determine the amount of depreciation under various methods and its Accounting Procedures. • To enable the students to ascertain the profit or loss under single entry system and also to convert from single entry to double entry system of 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Know the various methods of calculating and recording depreciation in the books of accounts. • Determine the profit o loss under single entry system and also to convert the books written on single entry basis (incomplete 	National

			<p>accounting.</p> <ul style="list-style-type: none"> • To make the students to understand the techniques of preparing the Receipts & Payments Account and Income and Expenditure Account. • To make the students to learn the functional aspects Departmental Accounts. • To equip the students to determine the business results of the Branch under different methods. 	<p>records) into proper double entry system.</p> <ul style="list-style-type: none"> • Prepare the final accounts of non-trading concern to determine the surplus or deficit. • Deal with departmental accounts and the accounting treatment on inter-departmental transfers. • Understand the concept of Branches and their accounting of dependent and independent branches. 	
4	BANKING AND INSURANCE	C217	<ul style="list-style-type: none"> • To get acquainted the concept of banking along with its origin, types, role • To acquire about the information on different types functions of central bank in India and commercial bank. • To learn about negotiable instruments such as Primary note, bill of exchange and cheque its types, parties participate in negotiable instruments. • To improve their knowledge on recent trend in banking like E banking, debit card, credit card and ATM. • To get basic knowledge about concepts of insurance its types, 	<ul style="list-style-type: none"> • Apply their knowledge on the concept of banking along with its origin, types and role. • Understand and construct about the information on functions of RBI and functions of commercial bank. • Understand and analyze the types of negotiable instruments like cheques its types. • Evaluate the recent trend in banking like E-banking and its types. • Understand about the basic concepts of insurance and IRDA. 	National

			principles, banc assurance, IRDA.		
5	FINANCIAL ACCOUNTING II	C325	<ul style="list-style-type: none"> • To provide knowledge on the general insurance policies available for risk mitigation in businesses and preparation of a statement of claim. • To acquaint the students with the concepts of Hire Purchase and Installment Purchase System. • To impart knowledge on the accounting procedures involved in admission of a partner in a partnership firm. • To develop expertise knowledge on the accounting procedures involved in retirement and death of a partner in a partnership firm. • To inculcate knowledge on the concept of dissolution of a firm and the accounting procedure involved in closing the books of a partnership firm. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Appreciate the importance of a fire insurance policy for a business and prepare a statement of claim in the event of a fire accident. • Prepare the books of accounts involved in the hire purchase and installment purchase system. • Carry out the adjustments of the books of accounts of a partnership firm in the event of admitting a new partner. • Carry out the adjustments of the books of accounts of a partnership firm in the event of retirement or death of a partner. • Understand the concept of dissolution of a partnership firm and close the books of accounts at the time of dissolution of a firm. 	National
6	PRINCIPLES OF MARKETING	C326	<ul style="list-style-type: none"> • To provide basic knowledge of concepts, principles, tools and techniques of Marketing. • To make the students to identify the process of developing new products and pricing them. 	<p>After the completion of this paper, the students will able to</p> <ul style="list-style-type: none"> • Gain knowledge and understand the basic concepts of marketing. • Familiar with developing of a new product and different 	Regional

			<ul style="list-style-type: none"> • To impart knowledge on different types of promotion and different distribution channels. • To make them understand the importance of the concept of consumer behavior and apply it in marketing • To make them understand the concepts of social marketing, green marketing, and rural marketing. 	<p>pricing methods.</p> <ul style="list-style-type: none"> • Aware of various promotion and distribution strategies. • Understand the various factors influencing consumer behavior. • Gain knowledge on the recent developments in marketing. 	
7	MERCANTILE LAW	C327	<ul style="list-style-type: none"> • To provide the students an understanding on the fundamental tenets of The Indian Contract Act 1872. • To provide knowledge on the essential elements of a valid contract, its performance and discharge. • To inculcate awareness on the special contracts namely indemnity, bailment and pledge • To provide them knowledge on the legal procedures involved in formation of a company. • To help them understand how companies are managed and the roles of a company secretary and directors. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Exhibit a basic knowledge of the Indian Contract Act, consideration and capacity to contract. • Evaluate the validity of a contract, its performance and discharge • Understand the elements of special contract and to recall the rights and duties of the parties to such contracts. • Understand the legal procedure involved in the creation of a joint stock company. • Recall the Provisions of the Indian Companies Act 2013, on the role of the directors and secretary of companies. 	National

8	CORPORATE ACCOUNTING	C424	<ul style="list-style-type: none"> • To provide knowledge on accounting for various types of shares and debentures issued by joint stock companies. • To acquaint the students on the concept of redemption of preference shares and debentures. • To develop an expertise knowledge on the preparation of final accounts of companies, as per the Indian Companies Act, 2013. • To prepare the students to understand the accounting treatment for different forms of mergers. • To inculcate understanding on the concept of internal reconstruction and the legal procedures on the reduction of capital. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Enhance their knowledge on the various types of shares and debentures along with their methods of issue and forfeiture • Understand the procedure involved in redeeming the preference shares and debentures issued by a company. • Prepare the final accounts of companies, as per the format prescribed by the Indian Companies Act, 2013 • Understand how amalgamation, absorption and external reconstruction of companies are carried out with their respective accounting treatment • Know how and when capital reduction is carried out in companies with a view to restructure the sick companies. 	National
9	COST ACCOUNTING	C425	<ul style="list-style-type: none"> • To provide an understanding of the concepts involved in cost accounting, and to enable students to prepare a cost sheet and tender. • To equip the students with knowledge on calculating and using different stock levels to maintain inventory. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Understand the basic concepts in Cost accounting and prepare a Cost Sheet with various cost break-ups • Calculate different levels of stock to effectively manage inventory in a factory 	National

			<ul style="list-style-type: none"> • To provide knowledge on the various methods of maintaining the stores ledger • To provide knowledge on different methods of remunerating labour • To provide an in-depth knowledge in overhead distribution among different departments. 	<ul style="list-style-type: none"> • Know how the closing stock is valued under different methods of valuation and maintain stores ledger in proper format. • Calculate remuneration according to different methods of remunerating labourers. • Measure the cost of overheads by primary and secondary distribution among different departments of an organisation. 	
10	BUSINESS MANAGEMENT	C426	<ul style="list-style-type: none"> • To introduce to the students the basic management concepts, principles and practices. • To provide knowledge on importance of planning and decision making in business organization. • To provide insight on principles of organization and its importance. • To orient them on various leadership styles and the theories of motivation • To make them aware of the importance and different techniques of control 	<p>After studying this course, students will be able to</p> <ul style="list-style-type: none"> • Remember the basic management concepts, principles and practices • Understand the importance of planning and decision making in a business. • Analyze the principles of organizing various activities of an organization. • Appreciate the role of leadership and motivation in an organization • Create new techniques in controlling various business activities. 	National

11	ADVANCED COST ACCOUNTING	C541	<p>The students will be able to</p> <ul style="list-style-type: none"> • Familiar with the concept of Job, Batch and Contract Costing. • Learn about operating costing; identify the reason for the differences in cost and financial statements and how to reconcile the same. • Develop skills in determine cost in the context of Process, Joint Product and By-Product Costing. • Develop the skills in Marginal Costing Techniques. • Gain insights into Standard Costing Techniques. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Apply the knowledge in determine the cost of Job, Batch and Contract business. • Understand the concept to determine the service cost and to reconcile the cost and financial accounting statements. • Analyze and integrate the concepts in process, joint product and by-product costing. • Apply various marginal costing techniques for taking effective decision-making in business. • Setup standards and analyze the variances with regard to materials, labour and overheads. 	National
12	INCOME TAX LAW AND PRACTICE I	C542	<p>The students will be able</p> <ul style="list-style-type: none"> • To enable the students to identify the basic concepts, definitions and terms related to Income Tax. • To impart knowledge on the conditions for determining the residential status and examine the scope of income of a person based on his residential status • To make the Students to understand various authorities under income tax and their powers/Duties 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Identify the technical terms related to Income Tax. • Apply relevant provisions to determine the residential status and total income of the person • Develop the interest in becoming tax authority by studying the duties and powers of various income tax authority • Students will apply the provisions related to computation of salaries and 	National

			<ul style="list-style-type: none"> • To enable the students to learn the provisions related to computation of taxable salary of an individual • To acquaint the students on the provisions related to computation of income from house property of an individual 	<p>compute taxable income from salaries</p> <ul style="list-style-type: none"> • Students will apply the provisions related to computation of Income from House Property and compute the taxable income from House property of an individual 	
13	FINANCIAL MANAGEMENT	C543	<p>The students will be able to</p> <ul style="list-style-type: none"> • Get acquainted with the concept of risk-return, time value of money. • Acquire about capital structure decisions, point of financial indifference, operating leverage, financial leverage and combined leverages. • Develop skills in determining the cost of various sources of capital like equity, debt, preference shares, and retained earnings. • Improve their knowledge on dividend policy and dividend decisions. • Gain insights into working capital management and operating cycle. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Apply their knowledge on the concept of risk-return, time value of money. • Understand the concepts of capital structure decisions, point of financial indifference, operating leverage, financial leverage and combined leverages. • Analyse and integrate their skills in determining the cost of various sources of capital like equity, debt, preference shares, and retained earnings. • Apply their awareness on dividend policy and dividend decisions. • Expose their insights into working capital management and operating cycle. 	National

14	ADVANCED CORPORATE ACCOUNTING	C544A	<p>The students will be able to</p> <ul style="list-style-type: none"> • Learn the valuation of Goodwill and shares and its methods • Acquire knowledge on liquidation of companies • Understand on Holding companies and forms of consolidation • Describe on Rebate on bills discounted, NPA and schedules for preparing Bank accounts • Gain knowledge on system of accounting in life insurance and general insurance 	<p>After completion of the course, the students would be able to</p> <ul style="list-style-type: none"> • Compute the value of goodwill and shares • Evaluate the statement of affairs and deficiency, prepare liquidators final statement of Account • Calculate the adjustments on consolidation of accounts and preparing consolidated balance sheet • Evaluate provisions on rebate and NPA and prepare Bank P&L A/c and Balance sheet • Ascertain net liability and prepare Revenue A/c and Balance sheet with relevant schedule 	National
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15	INDIRECT TAXATION	C544B	<p>This course aims to,</p> <ul style="list-style-type: none"> • Give a clear understanding of the concept of indirect taxes, its levy and its differences from the direct taxes. • Provide knowledge on the concept and structure of GST and its implementation in India. • To provide a clear understanding of the provisions of GST Act related to the conditions on 'supply' of goods and services and the valuation rules. • To help students understand the various provisions of the GST Act on availing of Input tax credit, blocked credits, utilisation and apportionment of credits. • To enable the students to understand the concept of customs duty and the recent changes in India's foreign trade policy and its administration. 	<p>On successful completion of the course, the students will be able to,</p> <ul style="list-style-type: none"> • Acquire a clear understanding on the concept of direct and indirect taxes • Possess knowledge on the concept of GST and its implementation in India • Recall the important provisions of GST Act relating to the conditions for supply and valuation of goods and services for levying GST • Understand the concept of Input tax credit and apply their knowledge in availing ITC in various situations. • Acquire knowledge on various concepts related to customs duty, the salient features of India's FTP and its implementation. 	National
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16	BUSINESS LOGISTICS	C544C	<p>The students will be able to-</p> <ul style="list-style-type: none"> • Understand the concept of supply chain and the evolution of logistics and supply chain management. • Distinguish between logistics and supply chain management, relationship management and logistics strategy. • Comprehend the growing importance of customer service, essence of logistics in marketing and its trends. • Explore the operational importance and benefits of Warehousing. • Get acquainted with principles and functionality of transportation and multimodal transport. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Understand the basic concepts of logistics and supply chain management and the contemporary theoretical and practical developments therein. • Demonstrate the understanding over the complex and interactive nature of participants, functions and flow of international logistics and supply chain management. • Analyze the various logistics operations and its management. • Highlight the significance and strategies of logistics and supply chain management. • Integrate the learned concepts while venturing into a Logistics & Supply Chain Management enterprise. 	Global
17	COMPUTER FUNDAMENTALS AND E-COMMERCE	C545A	<p>The students will be able to-</p> <ul style="list-style-type: none"> • Understand the basics of computer and the role of information technology in business. • Understand an operating system, its functions, types, advantages and disadvantages and learn about the application and utility software. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Develop interest in using computer system and information technology for professional career. • Develop skills for using various application software and operating system. • Apply excel tools in various 	Local

			<ul style="list-style-type: none"> • Learn basic Spreadsheet operations and its application in business. • Study about the Internet technologies and usage of internet to society. • Avail the knowledge in the application of E Commerce in the business field 	<p>areas of business.</p> <ul style="list-style-type: none"> • Understand about the internet, how to access it and what it can be used for. • Identify the importance of digital presence in business and implement the same in a working environment 	
18	ENTREPRENEURS HIP	C545B	<p>The students will be able to</p> <ul style="list-style-type: none"> • To understand the concept of entrepreneurship and entrepreneurship development program. • To identify and avail the various financial support and other services provided by the various institutions. • To develop and evaluate the business ideas and opportunities. • To understand and prepare the project report to get the required finance. • To appraise the different schemes available for MSMEs, women entrepreneurs and franchising. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Explain the concept of entrepreneurship and entrepreneurship development programs. • Use the various financial support and other services provided by the various institutions. • Identify and appraise the various business ideas and opportunities. • Develop the project report to finance the projects. • Evaluate and choose the schemes available for MSMEs and women entrepreneurs. 	Local

19	MANAGEMENT ACCOUNTING	C647	<p>The students will be able to</p> <ul style="list-style-type: none"> • Gain knowledge on financial statement analysis • Classify ratios and its significance • Understand about concept of Fund and Accounting standard for CFS • Acquire knowledge on Budgeting and its techniques • Learn on capital budgeting and methods of analyzing proposals 	<p>After completion of the course, the students would be able to</p> <ul style="list-style-type: none"> • Analyze the financial statement with appropriate tools • Compute various ratios by using financial statement • Apply techniques on preparation of Fund flow statement and AS 3 for CFS • Prepare various types of budgeting to take decision in Management • Evaluate investment proposals by using traditional and modern methods 	National
20	INCOME TAX LAW AND PRACTICE II	C648	<p>The students will be able</p> <ul style="list-style-type: none"> • To describe the concepts and features of assessment of profits and gains of Doctor, Advocate and Chartered Accountant as individual assessee. • To develop the skill in assessing short term and long term capital gains of an Individual assessee who is involved in Business and Profession. • To equip the students with knowledge on calculating the taxable income from other sources of an Individual assessee. • To describe the mechanism of set-off and carry forward of 	<p>After completion of the course, the students would be able to</p> <ul style="list-style-type: none"> • Assess the taxable income of an Individual assessee who is involved in Business and Profession. • Compute and analyze the short term and long term capital gains of an Individual assessee who is involved in Business and Profession. • Compute taxable income from other sources of an Individual assessee after taking into account deduction • Students will be able to apply the mechanism of set-off and carry 	National

			<p>losses an Individual assesse under different heads</p> <ul style="list-style-type: none"> • To enable the students to compute the net total taxable income of an individual. 	<p>forward of losses an Individual assesse under different heads</p> <ul style="list-style-type: none"> • Compute the net total income of an individual after taking into account of deductions u/s 80. 	
21	HUMAN RESOURCE MANAGEMENT	C649	<p>The students will be able to</p> <ul style="list-style-type: none"> • To understand the various aspects of human resource management. • To estimate human resource requirement and develop human resource plan. • To devise the recruitment and selection strategies. • To examine the various training and development methods. • To measure the employee performance by using appropriate appraisal methods. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Describe the various aspects of human resource management. • Determine human resource requirements and prepare human resource plan. • Formulate the recruitment and selection strategies. • Assess the various training and development methods. • Measure the employees' performance by employing appropriate appraisal methods. 	Regional
22	PRACTICAL AUDITING	C650A	<p>The students will be able to</p> <ul style="list-style-type: none"> • Understand the various aspects of Auditing like features, history, scope and classifications of Audit. • Gain knowledge on internal check and internal control. • Understand the concept of vouching and various modes of vouching. • Implement verification and 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Understand the various concepts of Auditing and its types. • Compare and contrast the essence of internal check and internal control. • Apply acquired knowledge of auditing on vouching of various transactions recorded in the books of accounts. 	National

			<p>valuation of assets and liabilities.</p> <ul style="list-style-type: none"> • Acquire practical exposure on role of auditors in case of limited companies, how an auditor is appointed, his rights, duties, liabilities and the preparation of audit report. 	<ul style="list-style-type: none"> • Associate and appraise gained knowledge on verification and valuation of assets. • Identify the role of auditors in statutory audit and reporting. 	
23	INDUSTRIAL RELATIONS AND LABOUR LAW	C650B	<p>This course aims.</p> <ul style="list-style-type: none"> • To introduce to the students the concept of industrial relations and the role of government in promoting it. • To make students understand the role of trade unions in promoting industrial relations and the major provisions of the Trade Unions Act. • Acquaint the students with the concepts, process and methods of collective bargaining and workers participation in management. • To help students understand the different forms of industrial disputes the functioning of various dispute settlement agencies. • To enable the students to understand the important provisions of the Factories Act relating to the conditions of 	<p>On successful completion of the course the students will be able to:</p> <ul style="list-style-type: none"> • Exhibit a clear understanding of the concept of industrial relations and the role of state in promoting it. • Know how trade unions are formed and their history in India along with their role in promoting industrial relations. • Understand the concepts of collective bargaining and workers participation in management and the related concepts. • Get a clear picture of the different forms of industrial disputes and the role of government in preventing and settling industrial disputes. • Know and recall the important provisions of the Factories Act relating to the terms of employment and conditions of 	Local

			labour and terms of employment.	labour.	
24	SOCIAL ENTREPRENEURS HIP	C650C	<p>The student will be able to-</p> <ul style="list-style-type: none"> • Understand the social entrepreneurship process, framework and social activism. • Examine the concepts underpinning social entrepreneurship to gain a comprehensive understanding of the opportunities. • Comprehend the concept of social innovation, environmental ethics and sustainability to evolve a successful model of social innovation. • Critically assess the strategic and operational issues faced by those who create and manage social enterprises in the process of bringing a successful model of social entrepreneurship. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Understand the social entrepreneurship process, framework and social activism. • Examine the concepts underpinning social entrepreneurship to gain a comprehensive understanding of the opportunities. • Identify and analyze the social entrepreneurial opportunities. • Comprehend the concept of social innovation, environmental ethics and sustainability to evaluate and evolve a successful model of social innovation. • Critically assess the range of strategic and operational issues faced by those who create and manage social enterprises to create a successful model of social entrepreneurship. 	Local

25	COMPUTERIZED ACCOUNTING	C651A	<p>The students will be able to</p> <ul style="list-style-type: none"> • Get acquainted with the concept of accounting packages, TALLY ERP 9, etc. • Acquire about the information on creation, alteration and deletion of ledgers and accounting vouchers. • Develop skills in creation of inventory masters in TALLY ERP 9, like stock groups, stock categories, godowns, units of measure, etc. • Improve their knowledge on budgets, payroll system, and statutory features in TALLY. • Gain insights into analyse the reports on TALLY, extraction of ratios, cash flow statement and funds flow statement. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Apply their knowledge on the concept of accounting packages, TALLY ERP 9, etc. • Understand about the information on creation, alteration and deletion of ledgers and accounting vouchers. • Analyse and integrate their skills in creation of inventory masters in TALLY ERP 9, like stock groups, stock categories, godowns, units of measure, etc. • Apply their awareness on budgets, payroll system, and statutory features in TALLY. • Expose their insights into analyse the reports on TALLY, extraction of ratios, cash flow statement and funds flow statement. 	Regional
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26	MODERN SALESMANSHIP	C651B	<p>The students will be able to</p> <ul style="list-style-type: none"> • Get acquainted with the concept of salesmanship along with its objectives, features, advantages, etc. • Acquire about the information on different types of salesmanship and functions, duties, and qualities of a salesman. • Develop talents in knowing the different stages of personal selling and the various theories associated with personal selling. • Improve their knowledge on the process of recruiting a salesman and various types of training given to the salesmen. • Gain insights into the factors considered in controlling and evaluating the salesman. 	<p>After studying this course, students would be able to</p> <ul style="list-style-type: none"> • Apply their knowledge on the concept of salesmanship along with its objectives, features, advantages, etc. • Understand about the information on different types of salesmanship and functions, duties, and qualities of a salesman. • Analyze and integrate their skills in knowing the different stages of personal selling and the various theories associated with personal selling. • Apply their awareness on the process of recruiting a salesman and various types of training given to the salesmen. • Expose their insights into the factors considered in controlling and evaluating the salesman. 	Local
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Name of the Programme: M. Com

Programme Outcomes at Postgraduate Level

Postgraduates will be able to:

1. PO: Demonstrate intense knowledge in their discipline
2. PO: Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
3. PO: Develop expertise in their field of study through projects and research activities
4. PO: Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
5. PO: Develop social and ethical responsibility in the transfer and management of knowledge.

Programme Specific outcome (PSO)

1. Acquired in depth knowledge of business, managing business through marketing, banking, insurance, finance, accounting, auditing, laws, tax practices and related matters.
2. Applying qualitative skills to help and to resolve conflicts and negotiation in the business settings with ethics and moral values in the corporate
3. Analyse a decision and substantiate the decision making process through modeling consultancy, data analysis and develop employability skills.
4. Evaluate the risk and returns associated with various investment avenues for an investment plan and develops entrepreneurial skills.
5. Offer services as an analyst or consultant or member of staff of accounts / audit unit of an organisation or institution

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ADVANCED FINANCIAL ACCOUNTING	C722	<ul style="list-style-type: none"> • To discover knowledge on the admission and retirement of partners. • To differentiate the books of Old Firm and the New Firm on the basis of joint life policy. • To interpret the applications of Garner Vs Murray at that time of dissolution of firm. • To summarizing the accounting problems in relating to Amalgamation, absorption and reconstruction of companies • To construct and summarized the knowledge on liquidators final statement 	<ul style="list-style-type: none"> • Discover knowledge on new profit sharing ratio, revaluation of assets and liabilities, adjustment of goodwill at that time admission, retirement and death of partners. • Illustrate the calculation of deceased partners' share of profit and treatment of Joint Life Policy in the books of Old Firm and the New Firm. • Experiment the unrecorded Assets and Liabilities with the application of Garner Vs Murray at that time of dissolution of firm. • Summarizing the accounting problems in relating to Amalgamation, absorption and reconstruction of companies. • Construct and summarized the knowledge on various payments, calculation of liquidators remuneration and preparation of liquidators final statement 	National

2	STRATEGIC HUMAN RESOURCE MANAGEMENT	C723	<ul style="list-style-type: none"> • To demonstrate the Human Resource Outsourcing concept and the emerging issues in Human Resource Management. • To exhibit specialised knowledge on Business Strategy and Human Resource Planning. • To develop expertise in the field of new trends in Recruitment and different forms of Training in the Organisations. • To prepare themselves in understanding the techniques of Performance Appraisal and followed with its Reward System. • To inculcate the acquaintance on Mentoring programmes applied in the Organisations and also the concept of e-HRM 	<ul style="list-style-type: none"> • Enhance their knowledge on Human Resource Outsourcing and recent issues in Human Resource Management. • Construct the ideas relevant to business Strategies that are adopted in HRM, through the dimensions of Job Analysis. • Enumerate the different forms of recruitment systems in the commercial organisations especially through internal and external sources. • Interpret the various career growth opportunities in commercial industries, by understanding the performance appraisal and rewards systems. • Discover the recent developments in the HRM, like Mentoring Programmes, E-HRM, Human Resource Information System, etc. 	National
3	CONSUMER BEHAVIOR	C724	<ul style="list-style-type: none"> • To make a students to understand the different dimation of consumer behavior, • To help students learn various models of consumer behavior. • To illustrate the various models of consumerism. • To discover knowledge on group dynamics of consumer. 	<ul style="list-style-type: none"> • Understand the factors influencing consumer buying behaviour and consumer process. • Discover the knowledge of various buying behaviour models and how the models are inspiring the consumers. • Evolution of Consumerism, Consumer Exploitation in India , 	National

			<ul style="list-style-type: none"> • To analyse Consumerism and to measure the customer satisfaction 	<p>Major Problems of Consumers Exploitation and the knowledge on consumer protection Act 1986.</p> <ul style="list-style-type: none"> • Discover knowledge on the role of group members and how the group members plays vital role in promotion of new products. • Analyse and strive to identify the customer satisfaction at various level 	
4	ADVANCED BUSINESS STATISTICS	C725	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

5	ADVANCED MANAGEMENT THEORY	C726A	<ul style="list-style-type: none"> • To enable students to understand the global business environment. • To enhance the knowledge in information technology and its impact on management. • To emphasis the students understand the trends in outsourcing. • To build knowledge on strategic management • To explore the contemporary issues and ideas on Leadership 	<ul style="list-style-type: none"> • Explain the cultural ethical environment at global level and its effects of management practices of total quality management. • Discover knowledge in Web based and Internet based Business Operation • Exhibit the methods of outsourcing and global trends in Outsourcing • Apply knowledge on measuring effectiveness of strategy and knowledge management. • Evaluate the leadership for Global Business Operation and gender equity in organisations 	National
6	SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT	C726B	<ul style="list-style-type: none"> • To understand about the securities market and its governing authorities. • To enhance the understanding of Securities Market • To develop the knowledge about fundamental analysis • To impart the knowledge on Risk and Return Analysis and Theories (Arbitrage and CAPM) • To inculcate the depth understanding about the derivative market 	<ul style="list-style-type: none"> • Have an overview about the securities market and its governing authorities. • Give the enhanced knowledge about the securities market and related matters • Explain the various dimensions of fundamental analysis • Appreciate the testing of Risk and Return Analysis and Portfolio Theories • Comprehend the investment avenues in derivative markets 	National

7	BUSINESS ETHICS	C726C	<ul style="list-style-type: none"> • To introduce the meaning of personal ethics, business ethics, concepts of business ethics, benefits of business ethics, characteristics of business ethics and relationship between law and Moral standard. • To discuss the meaning, growth, scope and emerging challenges in human resource management and ethical issues in human resource management. • To understand the ethical issues in marketing strategy, marketing mix, consumerism and protection of consumers related welfares. • To learn ethical issues in financial marketing, financial service industries, frauds in banks, insurance sectors and non life insurance sector. To teach meaning, importance and advantages of Corporate Social Responsibility and steps to attainment of CSR. 	<ul style="list-style-type: none"> • Students will remember the basic concepts, theories and characteristics of business ethics. • Students will understand the meaning, growth, scope and emerging challenges in human resource management and ethical issues in human resource management. • After studying these unit students analyze the ethical issues in marketing strategy, marketing mix, consumerism and protection of consumer related welfares. • The student will be able to analyze various ethical codes in corporate governance • Students will evaluate the ethical issues in financial marketing, financial service industry, frauds in banks, insurance sectors, non life insurance sector when they go for work and Students will create new methodologies/ strategy in solving ethical problems in business and business related ethical issues. 	National
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8	ACCOUNTING FOR MANAGERIAL DECISION MAKING	C823	<ul style="list-style-type: none"> • To enable students to acquire sound knowledge of concepts, methods and techniques of management accounting and to develop competence with their usage in managerial decision making control. • To analyse the operational efficiency by comparison of present ratio with those of the past working and also with those of other firms in the industry. • To ascertain various sources from where the funds were raised and the specific manner in which they were utilized between the dates of the two Balance Sheet. • To defend the importance of linking an organisations budget with its strategic plan. • To determine profitability at different level of production and sales. 	<ul style="list-style-type: none"> • Identify and describe factors that influence the effectiveness of decision making. • Validate or disprove the financing, investment and operating decisions of the firm. • Analyze the financial position of a company and to discuss the usefulness and format of the statement of cash flow • Understand how budget and variances are used to control operations. • Determine the structure of short run production based on the relation among total, average and marginal products. 	National
9	ADVANCED COST ACCOUNTING	C824	<ul style="list-style-type: none"> • To provide knowledge of Operation costing. • To make students to understand the Process Costing. • To enrich the various methods relating to job, service, batch and contract costing • To make clear about 	<ul style="list-style-type: none"> • Recall the knowledge of transport, hospital, power and hotel Operation costing. • Identifying and experimenting the process costing for normal, abnormal loss or gain. • Infer the various method methods of cost allocation to joint products and valuation of 	National

			<p>Reconciliation of cost and Financial Accounting.</p> <ul style="list-style-type: none"> To equip knowledge on Standard Costing and Variance Analysis 	<p>By-products.</p> <ul style="list-style-type: none"> Formulate reconciliation statement Reconciliation of cost and Memorandum reconciliation statement account. Evaluate Standard Costing and to make comparison between estimated cost and standards. 	
10	RESEARCH METHODOLOGY	C825	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Explain the basicconcepts in Research in SocialSciencesandbusinessen quiry Develop the skills for scientificcollectionofdataandd etermining the sample size forresearch. Able to understand the application of appropriate tool for data collection and to test the validity and reliability of research tools Createsawarenessamongstud entswithregardtothevarious statistical tools and testof significance that are appliedinsocialandbusinessre search Write a research report and dissertation 	Global developmental needs

11	QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS	C826	<ul style="list-style-type: none"> • To demonstrate the Linear Programming Problem with Mathematical Formulation, Graphical Method and Simplex Method. • To exhibit specialised knowledge on Transportation Problem with North West Corner, Least Cost and Vogel's Approximation Methods. • To develop expertise in the field of Assignment Problem by using Hungarian Method and also by using Traveling Salesman concept. • To prepare themselves in understanding the techniques of Inventory Control with various cost concepts. • To inculcate students, the awareness on Network Scheduling problems by using PERT and CPM Techniques. 	<ul style="list-style-type: none"> • Enhance their knowledge on Linear Programming Problem (L.P.P) models through Mathematical, Graphical and Simplex Methods. • Horizon their knowledge in the Transportation Problem by applying North West Corner, Least Cost and Vogel's Approximation methods. • Experiment the Assignment Problem which can be solved by using Hungarian method. • Evaluate the knowledge on various cost concepts involved in the manufacturing industries, by using the inventory control techniques. • Formulate the basic Network Scheduling Model, by using PERT and CPM techniques. 	National
12	ENTREPRENEUR IAL DEVELOPMENT	C827A	<ul style="list-style-type: none"> • To enable the students to understand the concept of entrepreneurship and to learn the professional behaviour on entrepreneurship • To create the awareness about women entrepreneurs and of their 	<ul style="list-style-type: none"> • Obtain knowledge of concepts, functions of entrepreneur. • Enumerate significant changes and trends which create business opportunities and to analyze the environment for potential business opportunities 	National

			<p>empowerment</p> <ul style="list-style-type: none"> • To identify, develop and incubating successful business ideas • To analyse and create project formulation. • To identify the various financial institutions and promotional institutions to entrepreneurs at National and State level. 	<ul style="list-style-type: none"> • Develop successful business ideas • Analyse and create project formulation • Identify the various financial institutions and promotional institutions to entrepreneurs at National and State level. 	
13	INDIRECT TAXATION	C827B	<ul style="list-style-type: none"> • To acquire knowledge on indirect tax system • To gain knowledge on GST and procedures. • To provide a practical perspective of GST Returns. • To identify and analyze online filling GST • To Understand the Customs Act 	<ul style="list-style-type: none"> • Gain knowledge on Indirect Tax system • Acquire knowledge on GST • Assess the registration procedure in GST • Aware of GST E return filling details • Understand the Customs Act 	National
14	COMMERCE AND COMPUTERISED ACCOUNTING	C827C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	Global developmental needs

			<p>Electronic Payment System and different forms of e-payment.</p> <ul style="list-style-type: none"> • To make the students to appreciate the differences between Manual Accounting vs. Computerised Accounting. • To enable the students to prepare the statements of accounting and cash flow statements in the computerised format. 	<p>Payment System and also they will learn E-cash, E-Cheque and currency servers.</p> <ul style="list-style-type: none"> • 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 preparation of computerised statements like Day Book, Trial Balance, Cash Flow statements, etc. 	
15	STUDY PAPER I SERVICES MARKETING	C829SP1	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 dimensions of quality and causes of Gaps. • Integrate the service marketing skills on various service sectors. 	National and global developmental needs
16	ADVANCED CORPORATE ACCOUNTING	C927	<ul style="list-style-type: none"> • To enable students to acquire sound knowledge on Holding Company Accounts, • To accumulate knowledge on legal provision related to Banking Company Accounts and to learn 	<ul style="list-style-type: none"> • Accumulate the practical knowledge on consolidation of holding company and its subsidiary Ltd. • Apply the Schedules for Profit and loss account and the legal provisions involved in the 	National

			<p>the advantages of schedule system for the preparation of final accounts.</p> <ul style="list-style-type: none"> • To ascertain various forms of insurance and insurance business and also it brings the knowledge on IRDA regulation in related to Final accounts. • To analyse the importance inflation accounting and price level accounting. Accumulating the gaining knowledge on Methods or Techniques of Price Level Accounting. • To identify the significance of corporate social responsibility through human resource accounting and its responsibility towards staff and to the society. 	<p>preparation of Final Accounts</p> <ul style="list-style-type: none"> • Analyze various schedules of Insurance company's business transactions and to execute the guidelines of IRDA • Appraise and to recall the value of accounting methods adopted in identifying price level changes. • Understand the concept of Human Resource Accounting and Corporate Social Responsibility 	
17	ORGANIZATIONAL BEHAVIOUR	C928	<ul style="list-style-type: none"> • To understand the concept of Organisational behaviour and make use of various approaches of Organisational behaviour • To identify biographical and learned characteristics in the formation of individual behaviour • To discover how perception, values and attitudes affects individual behaviour • To learn the classifications of group and to develop group performance also study about 	<ul style="list-style-type: none"> • Acquire the knowledge on the concept of Organisational behaviour, its applications in the global scenario • Evaluate the factors which affect individual behaviour like ability, personality and learning. • Determine the perceptual selectivity and contribution of values and attitude in forming individual behaviour. • Classify group to improve group performance and to evaluate the 	National

			<p>stress and conflict management</p> <ul style="list-style-type: none"> To evaluate the impact of organisational climate and organisational culture 	<p>causes of stress and conflict and strategies to overcome it.</p> <ul style="list-style-type: none"> 5. Compare the impact of various organisational climate and culture on the organisational performance. 	
18	INCOME TAX AND TAX PLANNING – I	C929	<ul style="list-style-type: none"> To provide the basic knowledge of Income Tax Law. To understand the Income tax authorities, TDS and e-filing procedures. To apply the provisions of Income Tax Act in the computation of taxable income from salary. To impart knowledge in computing taxable income under the head house property. To enable the students to compute the taxable income from business and profession. And To make the students to understand the importance of tax planning. 	<ul style="list-style-type: none"> Acquire knowledge of the basic provisions of Income Tax Act Understand with provisions of Income Tax Act on filing of return, Advance tax and TDS Assess the taxable income from salary during the service and after retirement by applying the concepts of tax planning. Anticipate the taxable income from house property and plan the tax liability on income from house property. Integrate the concept of tax planning under the head business and profession and minimise the tax liability. 	National
19	LOGISTICS AND SUPPLY CHAIN MANAGEMENT	C930A	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	Global developmental needs

			<p>logistics adopted in the organisations.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Analysing various modern financial supply chain management. • Applying the concepts of supply chain management with help if IT in supply chain management 	
20	EXECUTIVE SKILLS DEVELOPMENT	C930B	<ul style="list-style-type: none"> • To enable the student to know himself and to develop Executive personality • To equip the students with some basic communication skills • To train students to understand themselves and develop better personality traits. • To enable students understand the different types of complexes, inter personal relationships and develop a positive attitude towards Life. • To train and enable students to develop their executive personality skills for better employment opportunities. And to train students to develop their interview skills, and develop team skills and impart communicative skills such as reading, listening and speaking. 	<ul style="list-style-type: none"> • Understand their inner personality and identify various character traits in life. • Various complexes existing in the society and understand the various inter personal relationships. • Develop a keen sense of interest in developing their entrepreneurial skills. • Become more adopt in communication • More skillful in nonverbal communication. 	National

21	STRATEGIC MANAGEMENT	C930C	<ul style="list-style-type: none"> • To inculcate the basics of strategic management. • To know about Industry Analysis. • To understand how to analyse the company and the components involved in the process. • To summarize the strategies practised by the management. • To impart Change Management 	<ul style="list-style-type: none"> • Enhance their knowledge in Strategic Management and implementing and evaluating the practices. • Understand the industry analysis in Macro and Micro environment. • List out the strategies practiced by the management. • Analyse the company's strength and weakness. • Interpret the change management and Response Options. 	National
22	ADVANCED FINANCIAL MANAGEMENT	C1022	<ul style="list-style-type: none"> • To enable students to acquire knowledge on concept of Financial Management and identify the sources of finance. • To understand the factors affecting financial planning, over and under capitalization and to ascertain the leverage of the firm. • To examine the factors affecting capital structure by applying various theories of capital structure. • To calculate cost of capital on debt, preference share capital, equity share capital and retained earnings. • To evaluate the concepts of dividend policies adopted by the corporate in the process of pay- 	<ul style="list-style-type: none"> • Understand the concept of Financial Management and analyse the sources of Finance • Evaluate Financial planning and impact of under and over capitalization and also ascertain leverage of firm • Analyse capital structure and implement theories of capital structure • Estimate Cost of debt, preference share capital, Equity share capital and retained earning • Describe the concept of dividend and computing dividend based on relevance and irrelevance theories. 	National

			out and retention.		
23	LEGAL ASPECTS OF BUSINESS	C1023	<ul style="list-style-type: none"> 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 analyse 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 	<ul style="list-style-type: none"> 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
24	INCOME TAX AND TAX PLANNING – II	C1024	<ul style="list-style-type: none"> To impart knowledge on provisions related to assessing the taxable capital gain. To understand the rules on taxability of other incomes and minimise the taxable income through set-off and carry forward of losses. To develop ideal model of investments and savings based on the concepts of deductions, and to minimise the taxable income of individual. To acquire knowledge on taxability of income of companies 	<ul style="list-style-type: none"> Understand with the provisions on computation of taxable capital gain and plan the investments to claim exemption under capital gain. Familiar with the provisions of Income Tax Act on Income from other source and apply the provisions to adjust the loss under various heads of Income. Assess the taxable income and anticipate the tax liability Minimise the tax liability under the concepts of tax planning and deductions. 	National

			<p>and minimum alternate tax.</p> <ul style="list-style-type: none"> To minimise the tax liability without tax evasion and through in-depth knowledge on deductions and tax planning 	<ul style="list-style-type: none"> Compute the taxable income of company and their tax liability. 	
25	INTERNATIONAL BUSINESS	C1025	<ul style="list-style-type: none"> 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 Companies and its management in international marketing. To inculcate the knowledge on the association between foreign collaborations (including joint ventures) and international trade. 	<ul style="list-style-type: none"> 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 association between foreign collaborations (including joint ventures) and international trade. 	Global
26	INTERNATIONAL MARKETING	C1026A	<ul style="list-style-type: none"> To study and gain the knowledge on international marketing 	<ul style="list-style-type: none"> Enhance their knowledge on International marketing concepts 	Global developmental

			<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	needs
27	BANKING AND FINANCIAL SERVICES	C1026B	<ul style="list-style-type: none"> • To have the comprehensive knowledge of modern functions rendered by the banks. • To make the students to familiar with Retail Banking, Provisions of Non-performing Assets and Capital Adequacy Norms. • To explore in Merchant Banking, its services, SEBI guidelines to Merchant Banking and Depository Receipts • To inculcate the in-depth understanding on Leasing and Factoring • To evaluate and analyse the various modes of Mutual Fund and Venture Capital. 	<ul style="list-style-type: none"> • Have an knowledge about ATM, debit card, credit card, Online banking, mobile banking, EFT, ECS, RTGS and NIFT • Discover knowledge in Retail Banking and its Provisions relating to Non-performing Assets, Capital Adequacy Norms. • Comprehend the Merchant Banking, services rendered by Merchant Banking, SEBI guidelines to Merchant Banking and Depository Receipts • Discover the Leasing, Hire Purchase Agreement and Factoring • Analyse and develop the knowledge in the area of mutual fund and venture capital schemes. 	National

28	PROJECT MANAGEMENT	C1026C	<ul style="list-style-type: none"> • To study on the concept of project management and role of project manager • To identify investment opportunities and to formulate project • To evaluate various appraisals of project • To prepare project plan, its schedule and estimation of the cost of project • To manage and execute project and learn to apply control techniques 	<ul style="list-style-type: none"> • Acquire the knowledge on project management and role played by project manager • Analyse investment opportunities and formulate project • Evaluate market, technical, financial, commercial and managerial appraisals of project • Construct the plan and schedule for project and able to estimate the cost of project • Develop and execute the project and also apply various controlling techniques like PERT, CPM 	National
29	PROJECT	C931J	<ul style="list-style-type: none"> • To demonstrate the objectives, hypothesis, scope, problems and limitations of the research work carried on the project. • To exhibit specialised knowledge on the review of literature of a research work based on the project. • To develop an expertise on the research methodology and on the source of collection of information. • To make them understand the techniques of data analysis and interpretation using relevant statistical tools. 	<ul style="list-style-type: none"> • Enhance their knowledge on developing the Objectives, Scope, Problems and Limitations of a research work. • Construct the ideas relevant to the review of literature of a research work, by studying the previously done articles or research works. • Enumerate the different components of research methodology (like design, sample size, sampling, etc.) of a research work or a project work. • Interpret the data that were collected by them for their research work and analyse them 	National

			<ul style="list-style-type: none"> To enumerate the findings, suggestions and conclusions based on the objectives and hypothesis relevant to the subject of the research work. 	<p>in different outputs.</p> <ul style="list-style-type: none"> Discover the findings of the study of a particular research work and could able to give suggestions and conclusions of that research work. 	
30	BUSINESS PROCESS MANAGEMENT	C1028SP1	<ul style="list-style-type: none"> To understand Organizations, Community and Organizational Structure. To identify Organizational Structure Organizational Design To discover Power and Power Outcomes of Leadership To learn Elements of Business Intelligence Applications To evaluate Process of Measurement for Learning and Improvement. 	<ul style="list-style-type: none"> Acquire the knowledge on the Organizations, Community and Organizational Structure Evaluate the Organizational Structure Organizational Design Discover the Power and Outcomes of Leadership Understand elements of business Intelligence Applications Measurement for Learning and Improvement of management Process 	National
31	INCOME TAX PLANNING	C1028SP2	<ul style="list-style-type: none"> To provide the basic knowledge of Income Tax Law. To understand the Income from salary. To impart knowledge in perquisites. To enable the students to understand Gratuity and Commuted pension. To make the students to gain knowledge on Tax planning and TDS 	<ul style="list-style-type: none"> Acquire knowledge of the basic provisions of Income Tax Act Assess the taxable income from salary during the service and after retirement by applying the concepts of tax planning. Impart knowledge in perquisites, Profits in lieu of salary and Provident Fund. Anticipate and to find-out the Gratuity and Commuted pension. Understand with provisions of 	National

				Income Tax Act on filing of return, Advance tax and TDS.	
32	EXPORT AND IMPORT MANAGEMENT	C1028SP3	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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

Name of the Programme: B.Sc. Mathematics

Programme Outcomes at Undergraduate Level

Undergraduates will be able to:

- PO1:** Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment
- PO2:** Pursue higher learning programmes and become entrepreneurs
- PO3:** Recognize moral and ethical values and be socially responsible citizens in the society
- PO4:** Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
- PO5:** Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings
- PO6:** Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
- PO7:** Demonstrate communication skills both oral and written in personal and academic pursuits.

Programme Specific Outcomes

- PSO1: Solid Foundation in Knowledge:** Bachelor Degree in Mathematics is the culmination of in-depth knowledge of many core branches of mathematics, viz. Algebra, Calculus, Geometry, Differential Equations, Mechanics, Real and Complex Analysis including some related areas like Numerical Methods, Mathematical modelling, Operation Research, Probability and Statistics. Thus, this programme helps students in building a solid foundation for further higher studies and research in Mathematics.
- PSO2: Competency in Skills:** The skills and knowledge gained has intrinsic beauty, which leads to proficiency in analytical reasoning, critical understanding, analysis and synthesis in order to solve theoretical and practical problems. This can orient students towards applications of mathematics in other disciplines and moreover, can also be utilized in modelling and solving real life problems.

PSO 3: Problem Solving: Students undergoing this programme learn to logically question assertions, to recognize patterns and to distinguish between essential and irrelevant aspects of problems. This helps them to learn behave responsibly in a rapidly changing interdependent society.

PSO4: Interdisciplinary and Research Skills: Students completing this programme will be able to present mathematics clearly and precisely, make vague ideas precise by formulating them in the language of mathematics, describe mathematical ideas from multiple perspectives and explain fundamental concepts of mathematics to non- mathematicians.

PSO 5: Proficiency in Employments: This programme will help students to enhance their employability for Government jobs, jobs in banking, insurance and investment sectors,data analysis jobs, and jobs in various other public and private enterprises.

S No	TITLE OF THE PAPER	Course Code	Course Objectives	Course Outcomes	Relevance
1	DIFFERENTIAL CALCULUS	M116	<ul style="list-style-type: none"> To develop problem solving skills in Calculus and provide base for higher mathematics 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> To solve various types of algebraic equations, derive trigonometric identities and find real imaginary parts of 	<ul style="list-style-type: none"> 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. 	Global

			complex trigonometric expression.	<ul style="list-style-type: none"> • formulate the Trigonometric series. • determine and point out the relation between circular and hyperbolic function. 	
3	INTEGRAL CALCULUS	M214	<ul style="list-style-type: none"> • To develop problem solving skills in Calculus and provide base for higher mathematics. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To help the learners to solve standard types of ordinary and partial differential equations 	<ul style="list-style-type: none"> • 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.. 	Global

				<ul style="list-style-type: none"> • 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. 	
5	VECTOR CALCULUS	M315	<ul style="list-style-type: none"> • To develop deep understanding of key concepts followed by problems of applied mathematics, which are essential tools of modern applied mathematics 	<ul style="list-style-type: none"> • understand the definition of Scalar and Vectorpoint'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. • describe inter-relationship among the line integral, surface integral and triple integral formulation. • apply and analyze Greens', Gauss and Stokes theorem. 	Global
	SOLID GEOMETRY AND TRANSFORMS	M316	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	Global

				<ul style="list-style-type: none"> define the Fourier transform and its properties and convolution theorem and perform problems by Fourier transform. 	
6	MATHEMATICAL LOGIC (CERTIFICATE COURSE)		<ul style="list-style-type: none"> The students will acquire the knowledge of Logic and propositional 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 	<ul style="list-style-type: none"> 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
7	MATHEMATICAL APTITUDE – I (SSP)		<ul style="list-style-type: none"> To prepare the Students for Competitive Examinations 	<ul style="list-style-type: none"> gain knowledge about important topics that are necessary to clear competitive examinations. 	National
8	MATHEMATICAL COMPETENCE COURSE (SSP)		<ul style="list-style-type: none"> To train the students to acquire knowledge for appearing/ Preparing NBHM and all India PG entrance exams other competitive exams 	<ul style="list-style-type: none"> understand basic concepts of calculus, vectors, matrices, sequences ,series and algebra. 	National
9	NUMERICAL METHODS	M415	<ul style="list-style-type: none"> To introduce the scientific computation techniques to the students. 	<ul style="list-style-type: none"> find numerical solution to algebraic and transcendental equation. 	Global

				<ul style="list-style-type: none"> • 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. • understand the concept of numerical differentiation. • define integration formulas and analyze the integrals by using Trapezoidal and Simpson's formula. 	
10	ALGEBRAIC STRUCTURES – I	M416	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
11	ALGEBRAIC STRUCTURES – II	M541	<ul style="list-style-type: none"> • To acquire the knowledge of basic concept of some of the fundamental algebraic structures on Rings and Integral Domains, Ideals, Factor Rings and Polynomials. 	<ul style="list-style-type: none"> • 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 	Global

				<p>and irreducibility tests for factorization of polynomials.</p> <ul style="list-style-type: none"> • prove the divisibility of integral domain 	
12	REAL ANALYSIS – I	M542	<ul style="list-style-type: none"> • To study the real number system, point set topology, limits and continuity, derivatives of real-valued functions. 	<ul style="list-style-type: none"> • 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 theorem. • evaluate derivatives of real valued function using Rolle’s theorem, Mean value theorem and Taylor’s formula. 	Global
13	MECHANICS	M543	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

14	PROBABILITY AND STATISTICS	M544	<ul style="list-style-type: none"> To develop the statistical concepts and introduce the techniques of analysis and inference used for research in social and life sciences 	<ul style="list-style-type: none"> 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
15	NUMBER THEORY (ELECTIVE)	M545A	<ul style="list-style-type: none"> To study the divisibility, primes, congruence's and arithmetic functions in number theory. 	<ul style="list-style-type: none"> 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
16	MATHEMATICAL MODELING WITH DIFFERENCE AND DIFFERENTIAL EQUATIONS	M545B	<ul style="list-style-type: none"> To discuss the mathematical modeling through difference equations, differential equations, calculus of variations and 	<ul style="list-style-type: none"> 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 	Global

	(ELECTIVE)		dynamical programming.	endeavours. <ul style="list-style-type: none"> • 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. 	
17	FUZZY ALGEBRA (ELECTIVE)	M545C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
18	NON-MAJOR ELECTIVE MATHEMATICS FOR COMPETITIVE EXAMINATIONS-I	NMA 504	<ul style="list-style-type: none"> • To prepare the students for competitive examinations 	<ul style="list-style-type: none"> • to approach competitive examinations with less anxiety and fear. 	National

19	MATHEMATICAL APTITUDE – II (SSP)		<ul style="list-style-type: none"> To prepare the Students for Competitive Examinations. 	<ul style="list-style-type: none"> Acquire knowledge on important topics that are necessary to clear competitive examinations. 	National
20	MATHEMATICAL MODELING WITH SPREADSHEET		<ul style="list-style-type: none"> To analyze the long term behavior of discrete and continuous dynamical systems numerically and graphically using Spreadsheet. 	<ul style="list-style-type: none"> 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
21	LINEAR ALGEBRA	M643	<ul style="list-style-type: none"> To study the transformations, Matrices, Systems of Linear Equations, Determinants and Diagonalization in Vector Space 	<ul style="list-style-type: none"> 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
22	REAL ANALYSIS II	M644	<ul style="list-style-type: none"> To study on infinite series, test of convergence, rearrangement of Series, sequence of functions, uniform convergence and power series 	<ul style="list-style-type: none"> 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 	Global

				<p>infinite products.</p> <ul style="list-style-type: none"> • find the uniform convergence of a sequence of functions. • outline the concept of power series and formulate related results. 	
23	COMPLEX ANALYSIS	M645	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. • categorize the nature of singularities, poles and residues and perform the application of Cauchy residue theorem. 	Global
24	RESOURCE MANAGEMENT TECHNIQUES (ELECTIVE)	M646A	<ul style="list-style-type: none"> • To develop the skill of formulation of LPP and different techniques to solve it. • To know the applications of Transportation and 	<ul style="list-style-type: none"> • 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. 	Global

			<p>Assignment problems.</p> <ul style="list-style-type: none"> To study the optimizing problems in Sequencing, Networking and Inventory control. 	<ul style="list-style-type: none"> solve job sequencing problems. breakdown different inventory models evaluate PERT, CPM problems and develop applications 	
25	GRAPH THEORY (ELECTIVE)	M646B	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
26	DISCRETE MATHEMATICS (ELECTIVE)	M646C	<ul style="list-style-type: none"> Prepare students to develop mathematical foundations to understand , create mathematical arguments and focuses on the Formal languages , Automata, Lattices, Boolean Algebra and Graph Theory 	<ul style="list-style-type: none"> 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

27	MATHEMATICAL STATISTICS	M647	<ul style="list-style-type: none"> To apply statistical techniques for interpreting and drawing conclusion for business problem 	<ul style="list-style-type: none"> 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
28	NON-MAJOR ELECTIVE MATHEMATICS FOR COMPETITIVE EXAMINATIONS - 2	NMA 604	<ul style="list-style-type: none"> To prepare the students for competitive examinations 	<ul style="list-style-type: none"> acquire knowledge about profit and loss, problem on trains, boats and stream, problems on calendars, Probability and data interpretation problems which helps to clear competitive examinations 	National
29	SCILAB FOR MATHEMATICAL COMPUTATIONS		<ul style="list-style-type: none"> To acquire the practical knowledge of SCILAB for solving the Matrix, polynomials and differential equations 	<ul style="list-style-type: none"> solve problems in matrices using scilab. solve simple problems in ODE and PDE 	National

Name of the Programme: M Sc. Mathematics

Programme Outcomes at Postgraduate Level

PO1: Demonstrate intense knowledge in their discipline

PO2: Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice

PO3: Develop expertise in their field of study through projects and research activities

PO4: Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization

PO5: Develop social and ethical responsibility in the transfer and management of knowledge

Programme Outcomes at Research Level

Research scholars will be able to:

PO1: Develop and demonstrate deep knowledge in the field of study to become globally competent

PO2: Manage information, undertake investigations, conduct field study, do accurate document, network with experts and mobilize resources and skills

PO3: Develop and exhibit scientific temper and adopt professional code of conduct in pursuit of research activities

Programme Specific Outcome

Mathematics Majors should:

PSO 1: Apply the knowledge of mathematical concepts in interdisciplinary fields. Understand the nature of abstract mathematics and explore the concepts in further details.

PSO 2: Identify challenging problems in mathematics and find appropriate solutions.

PSO3: Pursue research in challenging areas of pure/applied mathematics. Employ confidently the knowledge of mathematical software and tools for treating the complex mathematical problems and scientific investigations.

PSO 4: Comprehend and write effective reports and design documentation related to mathematical research and literature, make effective presentations. Qualify national level tests like NET/GATE etc.

PSO5: Effectively communicate and explore ideas of mathematics for propagation of knowledge and popularization of mathematics in society.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ABSTRACT ALGEBRA	M745	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> To study the real number system, Functions of Bounded Variation and Rectifiable, Riemann–Stieltjes integral, Lebesgue Integral and Square Space 	<ul style="list-style-type: none"> 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

				<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To study and apply sampling theory, significance tests, estimation, testing of hypothesis and design of experiments 	<ul style="list-style-type: none"> • 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 	Global

				experiments and use appropriate experimental designs to analyze the experimental data.	
5	DIFFERENTIAL GEOMETRY	M749A	<ul style="list-style-type: none"> This course introduces space curves and their intrinsic properties of a surface and geodesics. Further the non – intrinsic properties of surfaces are explored 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

			problems.		
7	CODING THEORY	M749C	<ul style="list-style-type: none"> To provide students with elementary knowledge of theory of error correcting codes and readable introduction to mathematical aspect of coding 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> To develop skills in solving partial differential equations. 	<ul style="list-style-type: none"> 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 	Global

				<p>structure of solutions and using analytic methods for solutions.</p> <ul style="list-style-type: none"> investigate and solve boundary values problems and point out its significance 	
10	ADVANCED GRAPH THEORY	M850	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> To study mechanical systems under generalized coordinate, virtual work, energy and momentum, also to study the mechanics developed by Newton, Lagrange, Hamilton and Jacobi. 	<ul style="list-style-type: none"> 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	M852A	<ul style="list-style-type: none"> This Course aims to explore the potential of Mathematical Modeling 	<ul style="list-style-type: none"> describe standard modeling procedures, which involve observations of a natural system, the development of a numeric 	Global

	BIOLOGY		among the Students and in emphasizing the role of Mathematical Models in Biology and Medicine.	<p>and or/analytical model.</p> <ul style="list-style-type: none"> 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 	
13	SKILL ENHANCEMENT COURSE II – LINEAR ALGEBRA	M852B	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. bringout the flair for new and continuous learning process. build the dexterity. 	Global
14	NUMERICAL	M852C	<ul style="list-style-type: none"> To provide the student an understanding of the basic 	<ul style="list-style-type: none"> Understand the need for numerical methods in real life situations. 	Global

	ANALYSIS		<p>principles of numerical methods and to apply them in solving algebraic equations and ordinary differential equations numerically;</p> <ul style="list-style-type: none"> To introduce various difference operators to enable the students to apply them in interpolation and numerical differentiation and integration. 	<ul style="list-style-type: none"> Apply the methods to solve problems and find the size errors in each method. critically analyse 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. 	
15	CERTIFICATE COURSE - R LANGUAGE FOR STATISTICS		<ul style="list-style-type: none"> To introduce to the students the novel applications of R language and to give them a hands on experience of working with data 	<ul style="list-style-type: none"> 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
16	SELF-STUDY PAPER – FORMAL LANGUAGES		<ul style="list-style-type: none"> To obtain knowledge about finite automata, regular expressions and regular grammars, properties of 	<ul style="list-style-type: none"> understand basic concepts in Lattices , formal language and automata theory demonstrate abstract models of computing, including 	Global

	AND AUTOMATA		context free languages	<ul style="list-style-type: none"> 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 	
17	ADVANCED BUSINESS STATISTICS FOR MANAGEMENT		<ul style="list-style-type: none"> To impart the knowledge to analyze the data using statistical techniques, such as hypothesis testing and regression estimation 	<ul style="list-style-type: none"> 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)		<ul style="list-style-type: none"> To apply statistical techniques for interpreting and drawing conclusion for business problems. 	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> 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 of problems in various diversified fields. discuss the different methods of testing of 	Global

				hypothesis	
19	MATHEMATICAL FOUNDATIONS (FOR M.SC. COMPUTER SCIENCE)		<ul style="list-style-type: none"> To impart the knowledge of the concepts needed to test the logic of program, understanding in Identifying structures, properties of languages and Optimization method. 	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> 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)		<ul style="list-style-type: none"> To apply OR techniques for interpreting and drawing conclusion for business problems. 	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> 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)		<ul style="list-style-type: none"> To obtain knowledge on linear programming problems, transportation problems, assignment problems, inventory models, queuing models, project management and Game theory problems 	<ul style="list-style-type: none"> 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 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. 	Global
22	APPLIED OPERATIONS RESEARCH FOR MANAGEMENT (FOR MBA)		<ul style="list-style-type: none"> To impart the knowledge of quantitative methods used in linear programming problems, transportation problems, assignment problems, project management, game theory problems, replacement and maintenance 	<ul style="list-style-type: none"> 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. 	Global

				<ul style="list-style-type: none"> 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. 	
23	MATHEMATICAL FOUNDATIONS (TO M.SC. SOFTWARE TECHNOLOGY)		<ul style="list-style-type: none"> To impart the knowledge of the concepts needed to test the logic of program, understanding in Identifying structures, properties of languages and Optimization method. 	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> understand the concept of logic and propositional calculus and study basic logical operations. 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
24	MATHEMATICAL ANALYSIS	M953	<ul style="list-style-type: none"> To study and analyze the real number system, Fourier series, Fourier Integral, multivariable calculus, Cauchy Theorem and Residue Calculus 	<ul style="list-style-type: none"> 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 	Global

				<p>functions</p> <ul style="list-style-type: none"> • 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. 	
25	TOPOLOGY	M954	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. • develop qualitative tools to characterize connectedness, compactness, second countable, Hausdorff and develop tools to identify when two are equivalent (homeomorphic). 	Global
26	FLUID DYNAMICS	M956	<ul style="list-style-type: none"> • This course aims to provide basic knowledge in kinematics of fluids in motion, equations of motion of a fluid, three dimensional 	<ul style="list-style-type: none"> • Bring out the basic knowledge in Kinematics of fluids in motion. • understand the meaning of two dimensional and three dimensional flow and related problems. 	Global

			flows and viscous flows.	<ul style="list-style-type: none"> 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. 	
27	NONLINEAR DYNAMICAL SYSTEMS	M957A	<ul style="list-style-type: none"> To learn and apply phase plane analysis and stability techniques to problems in Science and technology. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Empowering students to crack competitive examinations such as NET, SET and TRB. To complement the theoretical content of the subject with exercise problems. 	<ul style="list-style-type: none"> 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 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. 	Global

29	MATHEMATICAL PHYSICS	M957C	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 Hamiltonian 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		<ul style="list-style-type: none"> To train students in the preparation of projects and dissertations using LaTeX 	<ul style="list-style-type: none"> 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		<ul style="list-style-type: none"> To prepare the students for competitive examinations 	<ul style="list-style-type: none"> make critique of quantitative information using proportional reasoning Interpret and compare weighted averages, indices, ranking. identify uses and misuses of 	Global

	EXAMINATIONS – I (IDC)			<p>percentages related to a proper understanding of the bases.</p> <ul style="list-style-type: none"> • examining and estimating percentages as rates per 100 • solve for an unknown quantity in proportional situation 	
32	COMPLEX FUNCTION THEORY	M1049	<ul style="list-style-type: none"> • To study the Maximum Principle, Schwarz Lemma, Evaluation of Certain Integrals, Analytic Continuation, Representation of Meromorphic and Entire Functions and Mapping Theorems. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To introduce the process of discretization, discrete version of Differential 	<ul style="list-style-type: none"> • define the basic concepts of difference equations. • calculate solutions of linear difference 	Global

			Equations, oscillation and the asymptotic behaviour of solutions of certain class of difference equations. Solving difference equations using z-transforms is stressed	<p>equations.</p> <ul style="list-style-type: none"> • solve difference equations using z-transforms. • explain the oscillatory behaviour of difference equations. • analyze and evaluate the asymptotic behaviour of solutions of certain class of difference equations. 	
35	STOCHASTIC PROCESSES	M1052A	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Empowering students to crack competitive examinations such as NET, SET and TRB. To complement the theoretical content of the subject with exercise problems 	<ul style="list-style-type: none"> • 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 Rouché's Theorem 	Global
37	THEORY OF TRANSFORMS	M1052C	<ul style="list-style-type: none"> • To impart the basic knowledge of principles of Fourier series and Z- 	<ul style="list-style-type: none"> • summarize knowledge of various mathematical concepts and techniques required for successful application of 	Global

			<p>Transforms; To give different techniques to solve integral problems using Transforms</p>	<p>mathematics in physics and related sciences</p> <ul style="list-style-type: none"> • 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. • 	
38	<p>CERTIFICATE COURSE – MATHEMATICS FOR COMPETITIVE EXAMINATIONS – II (IDC)</p>		<ul style="list-style-type: none"> • 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: 	<ul style="list-style-type: none"> • 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	<p>STATISTICAL AND NUMERICAL METHODS (FOR</p>		<ul style="list-style-type: none"> • This course aims at providing the necessary basic concepts of a few statistical and numerical 	<ul style="list-style-type: none"> • analyze various methods for testing of hypothesis. • understand numerical methods for finding the solution of some problems 	Global

	MCA)		methods and give procedures for solving numerically different kinds of problems occurring in engineering and technology	<p>upto a desired degree of accuracy.</p> <ul style="list-style-type: none"> • 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. 	
40	QUANTITATIVE APTITUDE TECHNIQUES (FOR MCA)		<ul style="list-style-type: none"> • To obtain aptitude skills and to solve quantitative problems. 	<ul style="list-style-type: none"> • 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

Name of the Programme: B.Sc Physics

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	MECHANICS	P113	<ul style="list-style-type: none"> To impart knowledge on concepts of Centre of gravity, Projectiles, Circular motion, Impact and Dynamics of rigid bodies. To learn the method of determining the centre of gravity of objects. To understand the projectile motion up and down an inclined plane. To learn the concept of Moment of inertia and the method of determining the Moment of Inertia of compound pendulum. To make the students to understand the basic concepts of Hydrostatics and Hydrodynamics. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Differentiate between centre of mass and centre of gravity of objects and will be able to determine the Center of gravity of spheres and cones. Apply the knowledge of circular motion to explain the concept of banking of curves. State the laws of impact and Assess the loss of K.E. due to direct and oblique impact of two smooth spheres. Determine the M.I. of solid sphere and spherical shell about a diameter and the M.I. of a compound pendulum about an axis through its centre of gravity. Derive Euler's equation and elucidate Bernoulli's theorem. Solve simple problems related to circular motion, projectiles, Impact and Rotational motion of rigid bodies. 	National developmental needs
2	PROPERTIES OF MATTER	P114	<ul style="list-style-type: none"> To impart knowledge on Elasticity, Moduli of elasticity, relation between elastic constants and the methods of 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Have an understanding of basic concepts of Elasticity and will be 	National developmental needs

			<p>determining rigidity modulus of material of objects.</p> <ul style="list-style-type: none"> • To learn, understand and determine the Young's modulus of material of objects. • To learn about the concept of Viscosity and understand the Poiseuille's method and Searle's method of determining the viscosity of liquids. • To comprehend the concept of Surface tension and evaluate the surface tension and interfacial surface tension of liquids by drop weight method. • To learn and understand the concepts of osmosis and diffusion and their applications. 	<p>able to determine the rigidity modulus of materials in the form of wire or rod.</p> <ul style="list-style-type: none"> • Evaluate the work done in stretching and twisting a wire and determine the rigidity modulus of materials in the form of wire and rod. • Determine the viscosity of liquids by Poiseuille's method and Searle's method and explain the theory behind the method. • Evaluate the surface tension and interfacial surface tension of liquids by drop weight method. • Distinguish between osmosis and diffusion and explain the methods of determining osmotic pressure and rate of diffusion of fluids. 	
3	HEAT AND THERMODYNAMICS	P212	<ul style="list-style-type: none"> • To learn basic concepts of calorimetry, CP and CV of a gas, Vanderwaal's equation of state and derive expressions for critical constants in terms of Vanderwaal's constants. • To define coefficient of thermal conductivity of a material and describe experimental methods for determining thermal conductivity of a good and a bad conductor. • To learn about Planck's quantum 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Distinguish between thermal capacity and specific heat capacity, CP and CV of a gas. They will be able to develop Vanderwaal's equation of state and derive expressions for critical constants in terms of Vanderwaal's constants. • Define coefficient of thermal conductivity of a material and describe experimental methods 	National developmental needs

			<p>theory of radiation and interpret energy distribution in the spectrum of a black body radiation.</p> <ul style="list-style-type: none"> • To study Boltzmann's Law of equipartition of energy and apply it to find the specific heat capacity of mono atomic and diatomic gases. • To learn and understand Joule Thomson effect, explain the different methods of producing low temperature and liquefaction of Hydrogen and Helium. • To learn laws of thermodynamics, explain the working of Otto engine, define thermodynamic potentials, derive Maxwell's relations and deduce Clausius-Clapeyron Equation. 	<p>for determining thermal conductivity of a good and a bad conductor.</p> <ul style="list-style-type: none"> • Explain Planck's quantum theory of radiation and interpret energy distribution in the spectrum of a black body radiation. • Explain Boltzmann's Law of equipartition of energy and apply it to find the specific heat capacity of mono atomic and diatomic gases. • Describe Joule Thomson effect, explain the different methods of producing low temperature and liquefaction of Hydrogen and Helium. • State the laws of thermodynamics, explain the working of Otto engine, define thermodynamic potentials, derive Maxwell's relations and deduce Clausius-Clapeyron Equation. 	
4	WAVES AND OSCILLATIONS	P213	<ul style="list-style-type: none"> • To introduce the concepts of waves, wave motion, interference of sound waves, Beats • To introduce the concept of interference of sound waves and beats. • To understand SHM, Lissajous figures and the concepts related to them. • To comprehend the concepts of 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Explain the different types of waves and derive expressions for plane progressive waves and energy of progressive waves. • Distinguish between progressive and stationary waves, derive expressions for stationary waves and energy of stationary waves, 	National developmental needs

			<p>damped vibrations, forced vibrations and resonance</p> <ul style="list-style-type: none"> • To acquire knowledge on the production, detection and applications of ultrasonic waves. • To provide a better understanding of factors affecting acoustics of buildings 	<p>explain the concept of beats and apply their knowledge on beats to estimate the frequency of sound waves.</p> <ul style="list-style-type: none"> • Explain Simple Harmonic Motion, derive expression for the resultant motion of a particle subjected to two SHMs of equal periods acting at right angles to each other and predict the shape of the curve traced by the particle. • Define, differentiate and derive expressions for free, damped and forced vibrations and determine the frequency of a.c. using sonometer. • Define reverberation time, summarize the factors affecting acoustics of buildings and suggest ways to improve acoustics of buildings. • Enumerate the production, detection and applications of ultrasonic waves. 	
5	PHYSICS MAIN PRACTICAL'S – I	PP207	<ul style="list-style-type: none"> • To determine the Young's modulus of materials in the form of a beam. • To calibrate voltmeter and ammeter using potentiometer. • To determine the viscosity and surfacetension of liquids. • To learn the usage of spectrometer and to determine 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Acquire laboratory skills/practical skills, a capacity for self management and teamwork,. They will be able to handle optical, electrical and electronic instruments effectively to take measurements/observations. 	Regional & National developmental needs

			<p>the refractive index of material of a prism..</p> <ul style="list-style-type: none"> • To construct basic logic gates using discrete components and verify their truth tables. • To construct low range power pack and stabilized power supply circuits and measure their outputs 	<ul style="list-style-type: none"> • Develop analytical and scientific reasoning skills. They will be able to analyze the measurements/observations to draw valid conclusions. • Determine the Young's modulus of materials in the form of beam, the rigidity modulus of materials in the form of wire, Viscosity, surface tension and Interfacial surface tension of liquids and recall the theory behind the experiments. • State the laws of transverse vibration of strings and measure the frequency of tuning forks and ac using sonometer. • Determine the focal length of convex and concave lenses, measure the refractive index of material of a prism using spectrometer and estimate the thickness of a thin wire by forming air wedge. • Design experiment to study the characteristics of Zener diode, construct stabilized power supply using zener diode, construct basic logic gates using diodes and transistor and examine their operation. 	
6	ALLIED PHYSICS FOR	AP105A	<ul style="list-style-type: none"> • To develop an understanding of basic concepts of mechanics, 	On successful completion of the course, the students will be able to	National developmental

	MATHEMATICS-I		<p>elasticity, viscosity, surface tension, heat and optics.</p> <ul style="list-style-type: none"> • To study the elastic behavior of the solids and viscosity of the liquids • To comprehend and learn the concepts of heat and heat transmission • To understand the concepts of interference and polarization of light waves and their applications. 	<ul style="list-style-type: none"> • Distinguish between centre of mass and centre of gravity of objects, state the laws of impact and calculate the loss of kinetic energy due to direct impact of smooth spheres. • Determine the Young's modulus of materials in the form of rod and rigidity modulus of material in the form of wire and explain the theory behind the experiments. • Define and measure the viscosity and the surface tension of liquids • Distinguish between CP and CV of a gas, describe experiments to measure the value of Cp and CV of gas, thermal conductivity of poor conductors and different methods of producing low temperature. • Differentiate between Spherical aberration and chromatic aberration in lenses, suggest ways to minimize them. • Explain interference and polarization of light and perform experiment to determine the thickness of a thin wire by forming air wedge. 	needs
7	ALLIED PHYSICS FOR MATHEMATICS-	AP205	<ul style="list-style-type: none"> • To understand the working principle of Lasers and their applications • To study the different types of 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Explain working principle of lasers and describe the 	National developmental needs

	II		<p>optical fibers and its applications</p> <ul style="list-style-type: none"> • To understand the properties of ultrasonics and its applications • To study the critical potential and quantum numbers associated with the vector atom model. • To study the process of artificial transmutation, radio isotopes and their applications, working of accelerators. • To study the fundamentals of electrical and electronic devices and circuits. 	<p>applications of Lasers and Optical fibers.</p> <ul style="list-style-type: none"> • Define SHM and derive expression for the resultant motion of a particle subjected to two SHMs acting at right angles. • State laws of transverse vibration of strings, determine the frequency of AC using a Sonometer and describe methods of production and detection of ultrasonics. • Specify and explain the Quantum numbers associated with the vector atom model, state the laws of Photoelectric effect and derive Einstein's photoelectric equation. • Determine the value of a resistor from its colour coding, explain the growth and decay of current in a circuit containing resistance and inductance and design an experiment to calibrate a low range voltmeter. • Construct two inputs AND, OR gates using diodes and NOT gate using Transistor, examine their operation and evaluate their performance, 	
8	ELECTRICITY AND MAGNETISM	P312	<ul style="list-style-type: none"> • To introduce to the students the basic concepts of Electrostatics • To make the students understand concepts on working and 	<p>On successful completion of course, the students will be able to</p> <ul style="list-style-type: none"> • Explain and differentiate between electric field and electric potential 	Regional & National developmental needs

			<p>applications of capacitors and electrometers</p> <ul style="list-style-type: none"> • To explain the principle and working of Potentiometer and Carey Foster's Bridge. Also to understand the working of LCR and resonance circuits. • To provide an overview of the fundamental principles of Coulomb's law, Biot-Savart law and magnetostatics. • To make the students understand the various types of magnetism. 	<p>and also illustrate the coulomb's law and its applications</p> <ul style="list-style-type: none"> • Understand the functions and the basic principles of capacitors and electrometers. • Explain the working principle of Carey-Foster bridge and Potentiometer and apply their knowledge to set up experiments in the laboratory. • State and explain various laws of magnetostatics and illustrate their applications. • Compare the properties of Dia, Para and Ferro magnetic materials and identify the form of magnetism possessed by a material 	
9	OPTICS	P313	<ul style="list-style-type: none"> • To impart the knowledge on angular dispersion produced by prism, aberrations in lenses and methods of minimizing them in thin lenses. • To understand the basic phenomena of interference and determination of thickness of a thin wire and refractive index of medium by using various interference experiments • To explain the diffraction of light and classify Fresnel's and Fraunhofer diffraction with illustration of necessary theory and experiments. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Differentiate the various aberrations in lenses and describe different methods of minimizing them. • Explain the phenomenon of interference and illustrate interference experiments to find the thickness of a thin wire and refractive index of medium • Exemplify the diffraction of light and compare the Fresnel's and Fraunhofer diffraction of light with an illustrative diffraction experiments 	Regional & National developmental needs

			<ul style="list-style-type: none"> • To Illustrate the polarization of light waves, their types and explain the various optical activity produced when the light passing through the crystal. • To apply the LASER/MASER action produced in the material; analyze the principle, working mechanism and applications. 	<ul style="list-style-type: none"> • Compare the different types of polarization of light waves and analyze the optical characteristics when the light is passing through the crystals • State the principle of LASER/MASER action in materials and set up experiments to demonstrate the working mechanism of CO₂ and semiconductor lasers 	
10	MODERN PHYSICS	P414	<ul style="list-style-type: none"> • To gain knowledge about positive rays and mass spectrographs. • To acquire knowledge about magnetic dipole moment due to orbital and spin motions of electron. • To study and understand Zeeman effect and Paschen-Back effect. • To gain knowledge about electronic spectroscopy. • To review the fundamental concepts of vibrational spectroscopy. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Differentiate between Positive rays and cathode rays and explain the working principle of different mass spectrographs. • List and explain the various quantum numbers associated with electrons and distinguish between LS coupling and jj coupling in atoms • Differentiate between Zeeman effect and Anamolous Zeeman effect and explain Paschen–Back effect. • Understand the interaction of electromagnetic radiation with matter, state the basic laws of absorption and transmission of radiation and outline the principle involved in UV-Visible spectroscopic technique. 	National developmental needs

				<ul style="list-style-type: none"> Acquire a knowledge on Vibrational spectroscopy, inspect the functional groups in compounds using IR spectroscopy and Compare IR and Raman spectroscopy. 	
11	ELECTROMAGNETISM	P415	<ul style="list-style-type: none"> To impart knowledge on concepts of Electromagnetic induction To make students understand the concept of self-inductance To understand the working principle of Ballistic galvanometer and its applications To learn the principle and working of earth inductor and A.C generator To apply Maxwell's equations to discuss the propagation of electromagnetic waves in free space. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> State Faraday's laws of Electromagnetic induction and estimate the emf induced in a Rectangular loop of wire moving through a non uniform magnetic field Explain self-induction and its physical significances and design Anderson bridge to determine the self inductance of an inductor using. Understand and apply the principle of B.G. to determine the mutual inductance between pair of coils Outline the principle, working and applications of Earth inductor, Search coil and A.C. Generator Explain the significance of Maxwell's equations in free space and apply it to electromagnetic waves in isotropic non-conducting media. 	National developmental needs
12	PHYSICS MAIN PRACTICALS – II	PP413	<ul style="list-style-type: none"> To determine the Young's modulus of materials in the form of a beam by subjecting them to 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Use the spectrometer to estimate 	Regional & National developmental needs

			<p>Uniform and Nonuniform bending.</p> <ul style="list-style-type: none"> • To calibrate voltmeter and ammeter using potentiometer. • To determine the viscosity and surfacetension of liquids. • To learn the usage of spectrometer and to determine the wavelength of spectral lines. • To verify the logic functions of basic logic gates and design arithmetic circuits using discrete components and ICs. • To construct analog dual power supply and voltage stabilization circuits and measure their outputs. 	<p>the wavelength of spectral lines and the refractive index of materials</p> <ul style="list-style-type: none"> • Inspect the effective usage of Potentiometers, Careyfooster's bridge and BG • Describe the working of microscope and the telescope and use them effectively • Recall the logic functions of basic logic gates and design arithmetic circuits using discrete components and ICs • Construct analog dual power supply circuits and voltage stabilization circuits and measure their outputs 	
13	ALLIED PHYSICS FOR CHEMISTRY –I	AP309A	<ul style="list-style-type: none"> • To study the basics of elasticity and its importance in beams. • To study the concepts of viscosity and the various methods to determine the parameters experimentally. • To understand the concepts behind thermodynamics and thermodynamic laws. • To study the propagation of sound waves, the production of ultrasonic waves, Acoustics and their applications. • To distinguish the geometrical and physical optics. • To understand the concept of 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Acquire basic knowledge about elasticity and viscosity of liquids and measure the viscosity of liquids by Poiseuille's method. • State and explain different laws of thermodynamics and distinguish between adiabatic and isothermal changes. • Apply the laws of transverse vibrations to estimate the AC frequency using sonometer, describe the production and applications of Ultrasonic waves and recommend the conditions for 	National developmental needs

			basic electronics and digital electronics	<p>good acoustics of auditoriums.</p> <ul style="list-style-type: none"> • Comprehend the concepts of spherical aberration, chromatic aberration and the methods of minimizing them and interference of light. • Construct rectifiers and voltage regulators using diodes and explain the logic functions of basic logic gates. 	
14	ALLIED PHYSICS FOR CHEMISTRY –II	AP309B	<ul style="list-style-type: none"> • To study the basic ideas of electricity and magnetism • To study vector atom model and to determine the methods of critical potential • To study the structure of the alkali spectral lines • To study the basics of nuclear reactions, process of radioactivity and its applications • To understand the concepts of wave mechanics and dualistic nature of light • To study the different methods of preparing thin films, nanomaterials and their applications 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Describe the growth and decay of current in DC circuits, design experiments to calibrate ammeter and voltmeter using potentiometer and distinguish dia, para, and ferromagnetic materials. • Explain the various quantum numbers associated with the vector atom model. • Illustrate a knowledge on the basics of nuclear reactions, radioactivity and classification of elementary particles and estimate the amount of energy released in nuclear reactions. • State and explain the concepts of matter waves, Heisenberg's uncertainty principle and laws of photo electric effect. • Describe various methods of thin films and Nanomaterials 	National developmental needs

				preparation and state the applications of nanomaterials.	
15	ALLIED PHYSICS PRACTICALS FOR CHEMISTRY	PAP409 A	<ul style="list-style-type: none"> To perform experiments on elasticity of materials and viscosity of liquids To demonstrate an experiment to determine the frequency of ac mains To perform experiments on interference of light waves and its applications. To do calibration of voltmeter and ammeter using potentiometer To design simple analog and digital electronic circuits. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Apply their knowledge on properties of matter to perform experiments to determine the Young's modulus and Rigidity modulus of materials and viscosity of liquids Perform an experiment to determine the frequency of ac mains using sonometer and analyze the result obtained. Set up Newton's rings and air wedge experiments and apply their knowledge on interference of light waves to determine the refractive index of material of a lens and thickness of a wire. Use potentiometer to calibrate low range voltmeter and high range ammeter and explain the principle behind the experiment. Recall the logic function of different logic gates and employ them to construct simple electronic circuits. 	Regional & National developmental needs
16	ALLIED PHYSICS FOR COMPUTER SCIENCE –I	AP309B	<ul style="list-style-type: none"> To make the students to explore the Physics in active devices and also to introduce the concept of semiconductors and their working principles 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Analyze the functions of active devices especially diodes and transistors. 	Regional & National developmental needs

			<ul style="list-style-type: none"> • To explore the principles and applications of passive devices. • To understand the series and parallel circuits and their short and open circuits in real time applications. • To induce the minds of the students to understand the principle and applications of LASER in science and technology. • To make the students the importance of the optical fiber communication, LED, Photoresistor and solar cell. 	<ul style="list-style-type: none"> • Calculate the values of resistors and capacitors from the colour coding and understand the importance of the passive devices in everyday life. • Identify the short and open circuits in complex circuits which consist of series and parallel components. • Realize the importance of LASER in modern science and technology. • Understand the working principle of fiber optic cable, LED, LCD, photoresistor and solar cell. 	
17	ALLIED PHYSICS FOR COMPUTER SCIENCE – II	AP409B	<ul style="list-style-type: none"> • To introduce the fundamental concepts and working principles of various semiconductor devices and their applications. • To introduce the basic concepts of operational amplifier and its various applications. • To familiarize the switching characteristics of transistor, various multivibrators, applications of diode as integrator, differentiator, clipper and clamper. • To familiarize with the different number systems and combinational circuits utilized in the digital circuits. • To study the working of various 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Understand the working principle of JFET and design rectifier circuits. • Apply knowledge on op-amp to design and analyze various applications of op-amps. • Understand the working of multivibrators and design wave shaping circuits. • Gain knowledge of different types of number systems and their mutual conversions, State and prove DeMorgan's theorems and Explain the working principle of combinational circuits. • Construct and evaluate the 	Regional & National developmental needs

			flip-flops, registers, counters and their applications.	performance of flip-flops, registers and counters.	
18	ALLIED PHYSICS PRACTICALS FOR COMPUTER SCIENCE	PAP409 B	<ul style="list-style-type: none"> To have an hands on training to handle the electronic components and bread board To construct the logic circuits and demonstrate the output by truth tables To realize the importance of calibration of voltmeter and galvanometer To verify the theorems and Physics laws using passive and active devices To construct stabilized power supply by them self 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Handle the electronic components for constructing electronic circuits. Construct logic gate circuits. Calibrate voltmeter and galvanometer. Verify the Physics laws especially Ohms law and De Morgan's theorem. Construct stabilized power supply. 	Regional & National developmental needs
19	CLASSICAL MECHANICS AND STATISTICAL PHYSICS	P534	<ul style="list-style-type: none"> To revise Newtonian mechanics and introduce Lagrangian formulation of mechanics. To learn Hamilton's principle and Hamiltonian formulation of mechanics. To realize the reduction of a two-body problem to a one-body problem in a central force system. To understand the properties of macroscopic systems using the knowledge of the properties of individual particles. To know about classical and quantum statistics and their applications. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Identify the motion of mechanical systems and apply the Lagrangian formalism to generate equations of motion for them. Apply the knowledge of Hamilton's principle to solve physical problems, including simple pendulum, compound pendulum, linear harmonic oscillator. Determine the differential equation of orbit, stability of orbit under central force field Understand concepts of statistical mechanics and find the connection 	National developmental needs

				<p>between statistics and thermodynamics</p> <ul style="list-style-type: none"> • Differentiate between classical statistics and quantum statistics • Solve some problems like monoatomic gas, photon gas and electron gas and find the energy distribution of them using statistical distribution laws. 	
20	SEMICONDUCTOR DEVICES AND THEIR APPLICATIONS	P535	<ul style="list-style-type: none"> • To introduce diodes and their types along with their applications • To provide an overview of the principles, operation and applications of FET, MOSFET, UJT and SCR. • To Provide an overview of small signal and large signal amplifiers. • To Inculcating basic concepts about oscillators, their construction and working. • To introduce an operational amplifier and their linear and non-linear applications. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • explain the implications of characteristics of various types of diodes and different rectification process. • acquiring knowledge on Fabrication of a transistor, JFET, MOSFET, UJT and SCR • demonstrate the basic concept behind the working of a transistor amplifier, and able to explain the working of R-C coupled amplifier and calculate the gain of multistage amplifiers. • demonstrate the basic concept behind the working of an oscillator and multivibrators. • solving various mathematical operations like summing, difference, integrators, differentiators, sign changers etc., using operational amplifier 	Regional & National developmental needs

21	SOLID STATE PHYSICS	P536	<ul style="list-style-type: none"> • To impart knowledge on crystalline and amorphous substances, reciprocal lattice, cubic crystal structures, and X-ray diffraction. • To analyse and understand the lattice vibrations and to learn Einstein and Debye theories of specific heat of solids. • To understand various types of magnetic materials and to learn, their theories. • To learn about dielectric materials, their properties and applications. • To understand the basic concept of band theory of solids, classifications of solids based on band gap and explain superconductivity. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Differentiate between crystalline and amorphous materials, understand the concept of reciprocal lattice, compare different crystal structures and the explain x-ray diffraction. • Comprehend lattice vibrations and apply it to explain Einstein and Debye theories of specific heat of solids. • Discriminate between various types of magnetic materials and formulate theories to explain the origin of magnetic properties. • Describe polarization mechanism and outline theories of polarization. • Understand the basic concepts of band theory of solids, classify solids based on band gap and explain the phenomenon of superconductivity. 	National developmental needs
22	MATHEMATICAL PHYSICS	P537	<ul style="list-style-type: none"> • To develop an understanding of vector differentiation and vector integration. • To make the students familiarize with orthogonal curvilinear coordinates and vector spaces. • To understand the Beta, Gamma and Dirac–Delta function. • To impart the basic knowledge 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Acquire a knowledge of vector differentiation and vector integration and will be able to apply their knowledge to solve problems in vector differentiation and vector integration. • Understand the concepts of 	National developmental needs

			<p>on Fourier series and its Applications.</p> <ul style="list-style-type: none"> To familiarize partial differential equations and the applications of partial differential equations. 	<p>orthogonal curvilinear coordinates, linear independence, basis and dimension and apply these concepts to various vector spaces and subspaces.</p> <ul style="list-style-type: none"> Understand, analyze and solve problems on beta, gamma and Dirac delta functions. Comprehend and explain Fourier series, enumerate its importance and applications in physics. Evaluate higher order partial differential equations by the method of separation of variables. 	
23	<p>SUBJECT ELECTIVE I: NANOMATERIALS AND THEIR APPLICATIONS</p>	P538A	<ul style="list-style-type: none"> To know the fundamentals of nanotechnology. To learn about various physical methods to synthesis nanomaterials. To familiarize the students regarding the preparation of nanomaterial by different chemical methods. To acquaint the importance of carbon and their various forms. To develop an understanding among students about the various applications of nanotechnology. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> explain the origin and emergence of nanotechnology and also able to relate different nanostructures with each other. summarize and compare the electrical, vibrational and mechanical properties of nanomaterials prepare the nanomaterials by various physical and chemical methods. classify and compare carbon nanostructures and their properties. summarize the importance of nanomaterials and evaluate its applications in different fields. 	<p>National developmental needs</p>

24	<p style="text-align: center;">SUBJECT ELECTIVE – I: ELECTRONIC COMMUNICATION SYSTEMS</p>	P538B	<ul style="list-style-type: none"> • To provide a knowledge on fundamentals of electronic communication, electromagnetic spectrum and its applications. • To learn about the principles of various analog and digital modulation techniques. • To impart knowledge on cellular communication system and recent advances in mobile communication systems. • To make the students to understand the principles involved in fiber optic communication system and radar. • To explore the roles of microwaves and Satellites in electronic communication 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Understand the fundamentals of electronic communication, distinguish different regions of electromagnetic spectrum and describe their applications. • Compare different modulation techniques and appraise their advantages and importance. • explain the operation of cellular communication system and compare GSM and CDMA. • Demonstrate their knowledge on fiber optic combination system and describe the working of radar and its applications. • understand and formulate the role of microwaves and satellites in electronic communication. 	<p>National developmental needs</p>
25	<p style="text-align: center;">SUBJECT ELECTIVE - I: RENEWABLE ENERGY AND ENERGY HARVESTING</p>	P538C	<ul style="list-style-type: none"> • 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. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • 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 	<p>Regional & National developmental needs</p>

			<ul style="list-style-type: none"> 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. 	<p>installation towards power production.</p> <ul style="list-style-type: none"> 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. 	
26	SUBJECT ELECTIVE: PROGRAMMING IN C	P539A	<ul style="list-style-type: none"> To introduce the students to the basic concepts of C program To enable the students to understand the different types of operators, I/O functions, and their usage in writing programs To create the skill to write and execute simple C programs with control statements To learn to use functions in C programs and to solve problems. To know about the different kind of arrays and their usage to solve arithmetic problems. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Differentiate between C tokens, keywords and identifiers Declare and Initialize variables in C program Understand the concept of operators and I/O functions and use them effectively in C program Write and execute simple programs using control statements Define a function and apply code reusability with functions Classify the arrays, write programs with arrays, perform pointer arithmetic, and use the pre-processor. 	National developmental needs
27	SUBJECT ELECTIVE II: 8085 MICROPROCES	P539B	<ul style="list-style-type: none"> To introduce different number systems and their mutual conversions. To familiarize the students with the architecture of 8085 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Explain the different number systems and also recognize their mutual conversion methods. 	National developmental needs

	SOR AND ITS APPLICATIONS		<p>microprocessor and its interrupts.</p> <ul style="list-style-type: none"> • To understand the instruction set and addressing modes of 8085 microprocessor. • To learn methods of interfacing memory with 8085 microprocessor. • To develop assembly language program writing skills. 	<ul style="list-style-type: none"> • Describe the architecture and interrupts of 8085 microprocessor with neat sketch. • Classify the different instructions and also explain the different addressing modes of 8085 microprocessor. • Understand and explain the basic concepts of memory interfacing and I/O interfacing with 8085 microprocessor. • Apply their knowledge to write simple assembly language programs for 8085 microprocessor. 	
28	SUBJECT ELECTIVE II: MEDICAL PHYSICS	P539C	<ul style="list-style-type: none"> • To provide a knowledge on the physics principles involved in the pressure system, optical system, dynamics of human body and acoustics of human body. • To understand radiation exposure and its measurement and the working mechanism of different radiation detectors. • To learn the principles and instrumentation involved in various diagnostic systems. • To enable the students to understand the principle, instrumentation and working of biological imaging systems. • To create awareness on radiation 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Explain and differentiate the various physics principles involved in the dynamics of human body and in the pressure system, optical system, and acoustics of human body. • understand and distinguish the various units used in radiation exposure measurement and describe the working mechanism of different radiation detectors. • Demonstrate an understanding of working principle and instrumentation of various diagnostic systems. • understand the principle, 	Regional & National developmental needs

			hazards and protection against radiation hazards.	instrumentation and working of biological imaging systems and evaluate their merits and demerits. <ul style="list-style-type: none"> Describe various radiation hazards and design equipment for protection against radiation hazards. 	
29	ASTROPHYSICS	P720C	<ul style="list-style-type: none"> 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 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> 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 developmental needs
30	SELF STUDY: LASER PHYSICS AND FIBER OPTICS	P541SP1	<ul style="list-style-type: none"> To introduce the students to the basic principles of LASER. To provide a knowledge on various types of LASERs. To enhance the knowledge of different applications of LASER in Material Processing and Electronics Industry. To familiarize the applications of LASERS in Nuclear Energy and medicine. To provide an opportunity for 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Explain the basic principle of Laser emission. Examine the working principle and design considerations of various lasers. Outline the applications of laser in industries. Gain knowledge on applications of Lasers in fields such as Nuclear Energy, Medicine and Surgery. 	Regional & National developmental needs

			the students to learn about Optical fibres and Optical fibre communication system.	<ul style="list-style-type: none"> Comprehend the significance of optical fibre communication system. 	
31	APPLIED ELECTRONICS	P631	<ul style="list-style-type: none"> 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. To understand the working of Shift registers, Asynchronous counters and Synchronous counters. To study about the different types of ADC and DAC and the architecture and applications of timer IC 555. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> 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. Acquire a knowledge on Shift registers and counters and construct different Modulus counters. Explain the working of different types of ADC and DAC and predict their output voltage and describe the architecture and applications of timer IC 555. 	Regional & National developmental needs
32	NUCLEAR AND PARTICLE PHYSICS	P362	<ul style="list-style-type: none"> To introduce to the basic properties of nucleus and different nuclear models. To study about different types of radiation detectors, radioactivity and particle accelerators. To understand the different types of nuclear reactions and radioactivity. To learn about fission, fusion 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> explain the properties of nucleus, different nuclear models and their predictions. different types of radiation detectors and particle accelerators. demonstrate an understanding of the different types of nuclear reactions and radioactivity. Distinguish between nuclear 	National developmental needs

			<p>and different types of nuclear reactors.</p> <ul style="list-style-type: none"> To provide an overview of elementary particles and their interactions 	<p>fission and fusion, estimate the energy released in Nuclear reactions and compare different types of nuclear reactors.</p> <ul style="list-style-type: none"> Acquire a knowledge of elementary particles and their interactions. 	
33	<p>QUANTUM MECHANICS AND RELATIVITY</p>	P633	<ul style="list-style-type: none"> To introduce the concepts of Matter waves and Heisenberg's uncertainty principle. To learn the postulates of quantum mechanics, Schroedinger equations and Ehrenfest theorem. To understand the applications of Schroedinger equations. To study Galilean and Lorentz transformation equations and their applications. To provide an understanding on the relativistic variation of mass with velocity and postulates of general theory of relativity. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Understand the concepts of Matter waves, estimate the de-Broglie's wave length of electrons and explain Heisenberg's uncertainty principle. Distinguish between time dependent and time independent Schroedingerequations and apply Linear, momentum and energy operators. Describe the basic principles of quantum mechanics and explain operator formulation of quantum mechanics. Explain the concepts of frame of reference and inertial frames and state the fundamental postulates of Special theory of relativity. State the postulates of General theory of relativity and enumerate its applications. 	<p>National developmental needs</p>
34	<p>PHYSICS MAIN PRACTICALS –</p>	PP615	<ul style="list-style-type: none"> To familiarize the students with physics concenpts and experiments. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Design a circuit to convert a 	<p>Regional & National developmental needs</p>

	III (GENERAL EXPERIMENTS)		<ul style="list-style-type: none"> To acquaint the importance of practical experiments to students. To develop an understanding among students about conversion of a galvanometer into voltmeter and ammeters. To train the students in handling physics experiments. To facilitate the students for handling spectrometer and B.G experiments. 	<p>galvanometer into voltmeter and ammeter with desired calibration.</p> <ul style="list-style-type: none"> Apply the knowledge on potentiometer to estimate the EMF of a thermocouple. Estimate the value of g using compound pendulum. Recall the concept of Young's modulus and evaluate the young's modulus of the material of the given bar. Demonstrate experiments using spectrometer to determine the dispersive power of prism and refractive index of the material of the prism Determination of wavelength of Laser light using diffraction at a single slit 	
35	PHYSICS MAIN PRACTICALS – IV (ELECTRONIC EXPERIMENTS)	PP616	<ul style="list-style-type: none"> To construct Halfsubtractor, Full subtractor, 4 bit binary adder and 4 bit binary subtractor circuits using ICs and verify their truth tables. To simplify the given Boolean expressions using Karnaugh map, construct NAND-NAND circuit for the simplified expression and verify the truth table. To design Inverting and Non inverting amplifiers, Summer, 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> Construct Halfsubtractor, Full subtractor, 4 bit binary adder and 4 bit binary subtractor circuits using ICs and verify their truth tables. Simplify given Boolean expressions using Karnaugh map, construct NAND-NAND circuit for the simplified expression and verify the truth table. Design Inverting and Non inverting amplifiers, Summer, 	Regional & National developmental needs

			<p>Subtractor, Differentiator and Integrator circuits using OPAMP.</p> <ul style="list-style-type: none"> • To learn to construct amplifiers, Oscillators and Multivibrators using Transistors and measure their outputs. • To write assembly language programs for performing Addition, Subtraction, Multiplication, Division, Arranging the numbers in ascending order and in descending order and execute them using 8085 microprocessor and verify the results. 	<p>Subtractor, Differentiator and Integrator circuits using OPAMP.</p> <ul style="list-style-type: none"> • Construct amplifiers, Oscillators and Multivibrators using Transistors and measure their outputs. • Write assembly language programs for performing Addition, Subtraction, Multiplication, Division, Arranging the numbers in ascending order and in descending order and execute them using 8085 microprocessor and verify the results. 	
36	SUBJECT SKILL – I : ELECTRICAL CIRCUITS AND NETWORKS (THEORY)	P634S	<ul style="list-style-type: none"> • To develop an understanding of the basics of electrical devices and circuits. • To understand the fundamental laws of electrical circuits and various circuit analysis theorems. • To develop an understanding of single-phase and three-phase AC. • To know the effect of open circuits and short circuits • To impart knowledge of domestic wiring and circuit breakers. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Understand the symbols and working principles of electrical devices and circuits • Analyze electrical circuits (DC and AC) using mesh and network simplification theorems. • Differentiate between single-phase and three-phase AC and explain the working of AC circuits. • Explain the effects of shorts and opens in series and parallel circuits. • Understand domestic electrical wiring and the working of circuit breakers 	Regional & National developmental needs

37	BASIC INSTRUMENTATION	P641S	<ul style="list-style-type: none"> • To develop knowledge of principles and working of various analog meters. • To understand the principle and working of analog electrical instruments. • To impart knowledge of principles and working of digital instruments. • To learn about the working principle of various optical instruments used in measurement of physical quantities. • To develop the skill of usage of environmental instruments. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Acquire knowledge about the working principles of various analog meter instruments. • Understand the operation of various analog electrical instruments. • Differentiate between digital and analog instruments and explain their working. • Outline the working principle of various optical instruments. • Gain knowledge on the working and applications of various environmental instruments. 	Regional & National developmental needs
38	NON MAJOR ELECTIVE –I : REPAIR AND MAINTENANCE OF HOUSEHOLD	NPH503	<ul style="list-style-type: none"> • To provide an understanding of the basics of electricity and electrical safety. • To enable the students to understand the importance of earthing and energy storage devices. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Recall the safety precautions and apply them whenever it is necessary • Understand the importance of earthing and acquire a knowledge 	Regional & National developmental needs

	APPLIANCES		<ul style="list-style-type: none"> • To expose the students to the principles and working of home appliances. • To learn fault finding and replacing faulty component in electric iron. • To train the students in Repair and Maintenance of home appliances. 	<p>on energy storage devices</p> <ul style="list-style-type: none"> • Identify the fault in an electric iron box and rectify it • Explain the working of mixer, grinder, ceiling and table fans. • Install and test fluorescent lamp chock and starter 	
39	PHYSICS REVISITED SSP	P643SP1	<ul style="list-style-type: none"> • To enable the students to revise the concepts of mechanics, oscillations, waves, Black body radiation. • To recollect the concepts of thermodynamics and statistical physics. • To revisit the contents of Quantum mechanics • To help the students to review the concepts in Atomic and Nuclear Physics. • To understand the significance of semiconductor devices and their applications, this would help them to perform better in competitive examinations. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Recollect the basic concepts in mechanics, Waves and oscillations and explain black body radiation. • Recall the laws of thermodynamics, classical and quantum statistics. • Formulate the Schrodinger wave equation for free state and bounded state problems and evaluate the energy eigen value • Summarize the concepts in Atomic and Nuclear Physics. • Outline the working principle of semiconductor devices . 	Regional & National developmental needs

40	NON MAJOR ELECTIVE: PHYSICS IN EVERYDAY LIFE	NPH603	<ul style="list-style-type: none"> • To provide insights about the role of electromagnetic rays in everyday life • To understand the origin of acoustic waves and their applications • To understand the role of heat and fluids in our day to day life • To explore the working principle of electrical devices • To provide a broad view on heavenly bodies. 	<p>On successful completion of the course, the students will be able to</p> <ul style="list-style-type: none"> • Explain the reason behind the appearance of colors • explain the origin and applications of sound waves • explain applications of heat in everyday life • Rectify the faults in electrical heating devices • describe the salient features of objects in the universe 	National developmental needs
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Name of the Programme: M Sc. Physics

Programme Outcomes at Postgraduate Level

Programme will be able to:

1. Demonstrate intense knowledge in their discipline
2. Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
3. Develop expertise in their field of study through projects and research activities
4. Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
5. Develop social and ethical responsibility in the transfer and management of knowledge

Programme Specific Outcomes

On completion of the M.Sc programme in Physics, the students will

1. Develop the ability to identify and analyze complex physics problems in classical mechanics, statistical mechanics, quantum mechanics, and electromagnetic theory using the laws and theorems of physics with appropriate mathematical tools and thereby preparing the students to face competitive exams like CSIR-NET/SET/GATE/JEST and other similar exams.
2. Develop an in-depth knowledge by understanding the basic concepts of specialized and/or interdisciplinary courses such as nuclear and particle physics, molecular spectroscopy, solid state physics, electronics and experimental physics such as crystal growth and nanoscience.
3. Acquire the ability to handle certain advanced scientific equipment's through hands on training in basic as well as advanced areas of physics such as condensed matter physics, optics & lasers, electronics, microprocessors & microcontrollers and programming in C.

4. Create skills required for identifying socially relevant research problems in theoretical and/or experimental physics, collection of relevant data, analyze and interpret data through a supervised project leading to knowledge enhancement in interdisciplinary areas of research and publish their findings in reputed international and national journals following research and publication ethics.
5. Gain an in-depth knowledge in physics to be able to teach it at university/college level and in school level and to apply their skills to develop innovative scientific solutions for industrial and social needs.

S No	Title Of The Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	Mathematical Physics - I	P717	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	<p>global developmental needs</p>

				<p>such as elasticity, fluid mechanics, and general relativity.</p> <ul style="list-style-type: none"> • Acquire the basic knowledge on probability concepts and theorems of probability 	
2	Classical Mechanics And Statistical Mechanics	P718	<ul style="list-style-type: none"> • 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. • 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. 	<ul style="list-style-type: none"> • 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 and the corresponding thermodynamic potentials. • Acquire knowledge to calculate basic thermo dynamical quantities: energy, specific heat, entropy, Helmholtz free energy, etc in classical and quantum statistical models. 	global developmental needs
3	Quantum Mechanics – I	P719	<ul style="list-style-type: none"> • To provide an understanding of fundamental principles of quantum 	<ul style="list-style-type: none"> • Gain knowledge of development of quantum ideas and learn the wave nature 	global developmental needs

			<p>mechanics and the one-dimensional applications of Schrodinger's equation.</p> <ul style="list-style-type: none"> • 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. 	<p>of matter, uncertainty principle, Schrodinger's wave equation and its one-dimensional applications.</p> <ul style="list-style-type: none"> • 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. 	
4	Elective: Electronic Devices And Applications	P720A	<ul style="list-style-type: none"> • To introduce structures, physical operations and circuit applications of semiconductor devices. • To develop the ability design electronic circuits and to grasp the basic ideas of op-amps and its applications. • To acquaint and demonstrate the concepts on waveform generators using Op-amp and 555 timer. • To understand analog and digital signals and conversion techniques . • To impart the fixed function of 	<ul style="list-style-type: none"> • Understand the characteristics and applications of special purpose diodes. • Analyze input/output relations for various applications of Op-amp in analog circuits. • Explain the operation of oscillators and multivibrators using op-amp and 555 timer. • Recognize the relationship between digital and analog values in D/A and A/D converters. • Analyze, design and implement 	national, developmental needs

			combinational and sequential logical circuits and their implementation	combinational and sequential logic circuits	
5	Elective: Energy And Environmental Physics	P720B	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
6	Elective: Astrophysics	P720C	<ul style="list-style-type: none"> • To understand astrophysical processes and systems, ranging from sun to stars, galaxies and Universe. • To Study of birth and death of stars and types of stars. • To know the effect of temperature on stellar spectra and basics of its quantitative analysis • To know the members of our solar systems and its atmosphere. • To understand the working principle of Astronomical Telescope. 	<ul style="list-style-type: none"> • Classify different celestial objects and understand about universe • Understand the impact of astronomical bodies and formation of stars. • Explain stellar evolution, including red giants, supernovas, neutron stars, pulsars, white dwarfs and black holes, using evidence and presently accepted theories. • Describe the features of objects in the Solar System (Sun, planets, moons, asteroids, comets, planetary interiors, atmospheres) • Demonstrate the ability to observe the 	national developmental needs

				celestial objects by astronomical telescopes and instrumentation.	
7	Mathematical Physics - Ii	P820	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
8	Electromagnetic Theory	P821	<ul style="list-style-type: none"> • To provide a clear and logical presentation of problems in electrostatics. • To apply Biot-Savart law, scalar and vector potentials to measure magnetic fields. 	<ul style="list-style-type: none"> • Solve few electrostatics problems using Laplace equation. • Use Biot-Savart law, magnetic scalar and vector potentials to deduce magnetic fields due to current carrying elements. • Apply Maxwell's equations for the conservation of electromagnetic energy 	national developmental needs

			<ul style="list-style-type: none"> • To learn Maxwell's Equations and their applications. • To understand Fields and Radiation of Electromagnetic Sources • To develop an understanding of the propagation of electromagnetic waves and their properties. 	<ul style="list-style-type: none"> • Understand fields and radiation from antennas and deduce expression for power radiated from radiation sources. • Describe the propagation of electromagnetic waves in various media and discuss the kinematics and dynamic properties of electromagnetic waves. 	
9	Quantum Mechanics–Ii	P822	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
10	Advanced Physics Practicals	PP809	<ul style="list-style-type: none"> • To provide the students with a broad understanding of experimental procedures, calculations of some 	<ul style="list-style-type: none"> • Do Young's modulus experiments and to calculate the young's modulus, poisson's ratio and viscosity for the given materials • Set up the apparatus to get the spectra of 	regional developmental needs

			<p>physical parameters such as young's modulus, viscosity</p> <ul style="list-style-type: none"> • To help the students towards the critical und creative thinking through few spectroscopic experiments • To make the students to evaluate the electrical resistivity and conductivity of semiconducting materials • To empower the students to demonstrate few heat experiments • To train the students towards the skill development of advanced general physics experiments 	<p>light sources such as hydrogen, arcs of alloys/metals etc.</p> <ul style="list-style-type: none"> • Determine the electrical conductivity and resistivity of a semiconducting material using four probe apparatus • Obtain the saturation temperature of a black body and hence they are able to calculate the stefan's constant and temperature coefficient of thermistor • Do themselves independently few advanced general experiments such as half shade polarimeter, Planck's constant experiment 	
11	Electronics Experiments	PP810	<ul style="list-style-type: none"> • To familiarize students with various Electronic devices and their specifications. • To observe characteristics of electronic devices • To understand the design aspects of oscillator circuits • To familiarize the students with devices and circuit principles with special focus on applications related to instrumentations and measurements. • Develop skill for Design and Testing of different types of Electronic subsystems using Analog and Digital IC's. 	<ul style="list-style-type: none"> • Elucidate the basic operation of various power semiconductor devices. • Describe and analyze the characteristics of different electronic devices. • Measure voltage, frequency and phase of any waveform using CRO. • Design and implement various digital circuits. • Develop ability to diagnose faults and their rectification. 	local, developmental needs
12	Elective: Microprocessor	P823A	<ul style="list-style-type: none"> • To illustrate the architecture and interrupts of 8085 Microprocessor. 	<ul style="list-style-type: none"> • Gain knowledge about architecture and working of 8085 Microprocessor. 	regional developmental

	8085 And Microcontroller 8051		<ul style="list-style-type: none"> • To familiarize students with instruction sets, addressing modes and programming of 8085 microprocessor. • To familiarize the students with interfacing of memory with 8085microprocessor. • To illustrate the architecture of 8051 Microcontroller. • To familiarize students with instruction sets, addressing modes and programming of 8051 Microprocessor. 	<ul style="list-style-type: none"> • Develop assembly language programs using various programming tools in 8085 Microprocessor. • Illustrate how the different peripherals are interfaced with 8085Microprocessor. • Understand the internal design of 8051 microcontroller along with the features. • Develop assembly language programming to design microcontroller-based systems. 	needs
13	Elective: Geophysics	P823B	<ul style="list-style-type: none"> • To explore the fundamental background of geophysics and its importance among the earth science. • To make them understand the geomagnetic field and Magnetic elements. • To provide an understanding of Laboratory measurements of the physical properties of rocks. • To Study Natural and Artificial seismology and its relation to other Earth System. • To familiarize the students with the physical properties of minerals 	<ul style="list-style-type: none"> • Understand the physics and geology that form the basis for geophysical observation and measurement. • Explain the principles of geothermal flux distribution over continents and oceans. • Explain fundamental concepts underlying common exploration of petrophysics. • Acquire the knowledge of application of seismology. • Obtain knowledge about classification of minerals. 	National developmental needs
14	Elective:	P823C	<ul style="list-style-type: none"> • To explore the fundamental background 	<ul style="list-style-type: none"> • Explain physics behind the dynamics, molecular structure of proteins, amino 	Local

	Biophysics		<p>of physics behind the cellular and molecular structure and its dynamics.</p> <ul style="list-style-type: none"> • To provide an insight knowledge about the application of light and bio compatible nonmaterial in the field of bio physics. • To know about the applications of bio sensors. • To make the students to understand the application of light and non-ionizing radiation effect on biological system • To make the students to know about the physiochemical techniques used for the detection and treatment of various diseases. 	<p>acids and conduction system.</p> <ul style="list-style-type: none"> • Acquire the knowledge on various types of proteins, enzymes and its function in the bio metabolic activities. • Acquire the knowledge of application of bio Nano sensors in diagnosing. • Distinguish the effect of light, ionizing and non-ionizing radiation in the biological system • Differentiate the physical and chemical approach of diagnosing and application of such techniques. 	developmental needs
15	Self-Study Paper: Ultrasonics And Its Applications		<ul style="list-style-type: none"> • To impart the fundamental concepts of ultrasonic waves and their sources • To enable the students to understand the various instruments on generation ultrasonics waves and their applications. • To make the students to understand the influence of ultrasonic waves on molecular interactions studies in liquid systems • To learn the non-destructive testing and its importance in the industrial sectors. • To make them understand the medical 	<ul style="list-style-type: none"> • Acquire fundament knowledge of ultrasonic waves and the sources of ultrasound. • Learn and understand different ultrasonic instrumentations and general applications in the field of industries and measurements. • Gain the knowledge of ultrasonic waves in finding molecular interactions in multi-component liquid mixtures. • Recognize different types of ultrasonic non-destructive testing and their industrial applications. • Grasp the idea about clinical importance 	Local developmental needs

			applications of ultrasounds.	of ultrasound in Ophthalmology, obstetrics and gynecology, cardiovascular, biopsy and tissue related treatments.	
16	Self-Study Paper: Dielectric Spectroscopy		<ul style="list-style-type: none"> • To understand polarization and its dependence on frequency and temperature • To comprehend impedance spectrum and modulus spectrum • To derive the contribution to electrical conductivity due to grains and grain boundaries • To apply the hands on training and to interpret the data • To analyze the AC and DC conductivity of the dielectric materials 	<ul style="list-style-type: none"> • Understand the various polarization mechanisms and dependence of polarization on frequency and temperature • Explain the principle and construction of instrumentation and sample preparation • Separate the contribution to electrical conductivity due to grains and grain boundaries • Analyse the importance of the real and imaginary part of the modulus spectrum • Collect data and to interpret the data 	Regional developmental needs
17	Self-Study Paper: Crystal Growth Techniques		<ul style="list-style-type: none"> • To Understand the fundamentals of crystal growth and nucleation • To Analyze the low temperature method of crystal growth • To study fundamentals and advantages of temperature gradient/SR method • To acquire a qualitative idea on the Gel method for growing crystals • To Understand the melt growth technique of crystal growing 	<ul style="list-style-type: none"> • Acquire a qualitative idea on various parameters considered for growing crystals • Apply and understand laboratory technique of growing crystal from solution • Design the experimental setup for SR method and to grow technologically important crystals • Illustrate the mechanism of gel growth and its advantages. • Understand different techniques of 	Local developmental needs

				crystal growth from melt	
18	Solid State Physics	P917	<ul style="list-style-type: none"> • 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 their properties. • To familiarise with superconducting materials. 	<ul style="list-style-type: none"> • 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
19	Atomic And Molecular Spectroscopy	P918	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

			<p>its advantages/applications.</p> <ul style="list-style-type: none"> To understand the physics behind NMR and ESR spectroscopy, Mossbauer spectroscopic techniques. 	<p>materials science and various spectroscopic analyses.</p> <ul style="list-style-type: none"> Apply NMR and ESR spectroscopy, Mossbauer spectroscopic techniques to examine new materials for novel drugs in the field of medicine 	
20	C Programming And Research Methodology	P919	<ul style="list-style-type: none"> To introduce to the students the fundamentals of C programming. To enhance skill on problem solving by constructing algorithm/program. To familiarize the students with the nature of research and scientific writing. To introduce to the students various quality metrics to be followed while publishing paper. To analyze, interpret and evaluate scientific hypotheses and theories using rigorous methods such as statistical and mathematical techniques. 	<ul style="list-style-type: none"> Explain the fundamental concepts of C programming and applications in problem solving. Develop programs using the basic elements like control statements, arrays, strings and functions. Identify the good research problems and formulate the research design. Write quality research papers and publish them in reputed journals. Analyze the data with the use of appropriate tools and create the qualitative and quantitative solutions to problems. 	Regional developmental needs
21	Elective: Nanoscience And Technology	P920A	<ul style="list-style-type: none"> To provide an introduction to nanomaterials, their properties and applications. To know about synthesis of nanomaterials To acquire knowledge about the preparation of nanomaterials by physical 	<ul style="list-style-type: none"> Develop an understanding of nanomaterials applications Understand Advantages and disadvantages of chemical method Know the methods of nanomaterial preparations Acquire in depth knowledge about 	Regional developmental needs

			<p>methods</p> <ul style="list-style-type: none"> • To understand basic principles and instrumentation • To introduce to various thin films deposition techniques and characterization techniques. 	<p>various characterization techniques which will in turn kindle their research interest.</p> <ul style="list-style-type: none"> • Know some of the applications of Nanomaterials and thin films that are applicable in day today life. 	
22	Elective: Optical Physics	P920B	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
23	Elective: Computational Quantum Mechanics	P920C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	global developmental needs

			<ul style="list-style-type: none"> • To introduce Ab initio formalism of quantum computation. • To explore the Knowledge on Density Functional theory and its application. 	<ul style="list-style-type: none"> • 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. 	
24	Self-Study Paper: Shock Waves And High Pressure Physics In Material Science		<ul style="list-style-type: none"> • To create awareness about shock waves and types of shock waves • To import knowledge of different types of shock tubes • To make the students to understand the interaction of high pressure energy in atomic level in the materials • To enable the students to acquire knowledge on the high pressure materials science and its applications. • To explore the behavior of materials properties at harsh environments. 	<ul style="list-style-type: none"> • Explain the fundamental concepts of shock waves and high pressure experiments in materials. • Construct table top shock tubes • Develop a strong understanding about the materials properties under shock loaded and high pressure conditions. • Distinguish the static shock and dynamic shock phenomena • Understand the unusual behavior of materials in harsh conditions. 	National developmental needs
25	Self-Study Paper: Electrical		<ul style="list-style-type: none"> • To impart knowledge of basic electrical/electronic components • To understand the electrical components 	<ul style="list-style-type: none"> • Identify the different electrical/electronic components for house hold applications • Realize the electrical wiring for 	Local developmental

	Appliances		<p>in our household applications</p> <ul style="list-style-type: none"> • To apply the series and parallel electrical connections in the household appliances • To understand the principle and design of electric iron household appliances in our day to day life. • To understand the fundamentals and working of consumer electronics appliances. 	<p>household electrical connections.</p> <ul style="list-style-type: none"> • Explain the construction and working mechanism of some household electrical appliances. • Infer the knowledge, principle and working mechanism of house hold electrical appliances • To explain the principle and working mechanism of electrical appliances 	needs
26	Self-Study Paper: Research And Publication Ethics		<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
27	Electronic Instrumentation Techniques	P1015	<ul style="list-style-type: none"> • To expose the students to the principles and working of Transducers • To make the students to understand the 	<ul style="list-style-type: none"> • Understand the principles and working of Transducers and Analog and Digital Instruments used in measurement of various physical quantities. 	Local developmental needs

			<p>digital instrumentation used in measurement of various physical quantities.</p> <ul style="list-style-type: none"> • To make the students to understand the working of electrical and magnetic measurement instruments and to provide basic knowledge about the working of Compositional analysis instruments and Bio-medical instruments. • To impart the knowledge on analytical instrumentation for the identification of various elements. • To make the students on the application of various instrumentation used for the measurement of potentials developed by the body cells including ECG, EMG etc 	<ul style="list-style-type: none"> • Distinguish the analog and digital instrumentation and its working principle. • Apply the knowledge of electrical and magnetic property of the material in the measurement of conductivity • Understand the difference in the approach of absorption and emission property of radiation in detecting the elements of the surface and also the emission of electrons. • Acquire the knowledge of blood pressure, potentials produced by the cells of various organs including heart, muscle, brain and its measurement. 	
28	Nuclear And Particle Physics	P1016	<ul style="list-style-type: none"> • To provide brief introduction on the basic concept of nucleus including size, force and nuclear models • To impart the knowledge on two body system and nuclear interaction. • To provide an in-depth knowledge on types of nuclear reactions and its relation • To enhance the knowledge about various fundamental particles, their decay and transitions. • To make the students to understand about 	<ul style="list-style-type: none"> • Differentiate the different models of the nucleus and apply their idea in calculating the parameters theoretically. • Solve the two body problems in connection with nuclear interaction • Be able to identify the reason behind the mode of decay, transitions between the nuclear decays and have strong physical reasoning and problem solving skill and able to find solutions to the problems related with nuclear physics • Be able to demonstrate the different types of nuclear reaction and its applications in 	regional developmental needs

			<p>the basic ideas on elementary particles and its classifications and interaction of quarks</p>	<p>day today life including nuclear fission, fusion and its role in the construction of nuclear reactor.</p> <ul style="list-style-type: none"> • Be able to explain the basic concept of elementary particles based on the combination quarks projection and also acquire knowledge on strong and weak interaction. 	
29	Modern Physics Practicals	PP1009	<ul style="list-style-type: none"> • To relate theoretical concepts to real world applications and experiments. • To familiarize the students with optics, sound, magnetic and electric laboratory experiments and procedures. • To observe reliable data and record the observations. • To organize the measurements, estimate errors and write the laboratory record. • To develop an understanding of basic concepts and hands on training of advanced experiments. 	<ul style="list-style-type: none"> • Explain the theoretical concepts and working principle of the experiments. • Organize the experiments and observe the reliable data. • Analyze the observed data and calculate the value of a physical quantity without error. • Measure the velocity of ultrasonic waves in different liquid medium. • Apply physics concepts and ideas from lab to real time problems. 	Local developmental needs
30	Microprocessor, Microcontroller And C Programming Experiments	PP1010	<ul style="list-style-type: none"> • To develop the skill of understanding Instruction sets and opcode of 8085 microprocessor and 8051 Microcontroller. • To familiarize the students with interfacing with 8085 microprocessors to other Input/ output devices. • To enable students to write assembly language programs for software and 	<ul style="list-style-type: none"> • Write assembly level language programs for both software and hardware interfacing using 8085 microprocessors. • Write an assembly level language programs for software and hardware interfacing using 8051 microcontrollers. • Understand the different applications of microprocessor and microcontroller. • Develop C programs using the basic 	Regional developmental needs

			<p>interfacing devices.</p> <ul style="list-style-type: none"> • To familiarize the students about the C programming. • To analyze and evaluate the various theories, statistical methods and mathematical techniques using C programming 	<p>elements like control statements, arrays, strings and functions.</p> <ul style="list-style-type: none"> • Use appropriate mathematical techniques and concepts to obtain quantitative solutions to problems in Physics using C program. 	
31	Elective: Modern Optics	P1017A	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
32	Elective: Reactor Physics	P1017B	<ul style="list-style-type: none"> • To make the students to understand the concepts of nuclear reaction, cross section and chain reaction. • To make the students to differentiate between the types of neutrons produced 	<ul style="list-style-type: none"> • Understand the basic ideas of nuclear reaction, cross section and the process of chain reaction. • Identify and differentiate the various energy ranges of neutrons produced in a 	Regional developmental needs

			<p>in a nuclear reaction and the concept of neutron diffusion.</p> <ul style="list-style-type: none"> • To provide an in-depth knowledge of fuels and materials used for the nuclear energy production. • To explain the concept of moderation of neutron in a nuclear reactor and its critical condition in the operation of a nuclear reactor • To provide an extravagant details on the types of nuclear reactors and it working principle. 	<p>chain reaction and its diffusion property</p> <ul style="list-style-type: none"> • Explain and analyze the properties of fuels and materials used in a typical reactor • Demonstrate the importance of neutron production and critical condition through diffusion equation • Apply the knowledge chain reaction ,able to calculate the critical value for a typical nuclear reactor and understand the working concept of different reactors and their applications. 	
33	Elective: Digital Signal Processing	P1017C	<ul style="list-style-type: none"> • To introduce the basic principles of digital signal processing (DSP) and provide an understanding of the fundamentals, implementation and applications of DSP techniques. • To introduce signals, systems, time and frequency domain concepts and the associated mathematical tools those are fundamental to all DSP techniques. • To provide a thorough understanding and working knowledge of design, implementation, analysis and comparison of digital filters for processing of discrete time signals. • To impart the knowledge of spectral properties of discrete-time systems through the use of Discrete Fourier transform (FFT) of sequences. 	<ul style="list-style-type: none"> • Understand the fundamental concepts such as linearity, time-invariance, frequency response, z-transforms and the discrete time Fourier transform as applied to discrete time signal processing systems. • Understand the analytical tools such as Fourier transforms, Discrete Fourier transforms, Fast Fourier Transforms and Z-Transforms required for digital signal processing. • Get familiarized with various structures of IIR and FIR systems. • Design and realize various digital filters for digital signal processing. • Familiarize with techniques of analysis of discrete-time signals and the use of Z- 	National developmental needs

			<ul style="list-style-type: none"> • To introduce various sampling techniques and different types of filters. 	transforms	
34	Analytical Instrumentation And Characterization Techniques		<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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

Name of the Programme: B Sc. Chemistry

Programme Outcomes at Undergraduate Level

Undergraduates will be able to:

- PO1: Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment
- PO2: Pursue higher learning programmes and become entrepreneurs
- PO3: Recognize moral and ethical values and be socially responsible citizens in the society
- PO4: Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
- PO5: Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings
- PO6: Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
- PO7: Demonstrate communication skills both oral and written in personal and academic pursuits

Programme Specific Outcome (PSO) For UG-Chemistry

Undergraduates in Chemistry are supposed to

- PSO1: Describe the fundamentals and theories in different domains of chemistry which enables them for higher studies.
- PSO2: Have basic knowledge in few fundamental concepts in mathematics and physics.
- PSO3: Have capacity to understand and solve common problems and issues arise related to chemistry.
- PSO4: Get adequate skills to devise methods to analyse chemicals both qualitatively and quantitatively.
- PSO5: Have a thorough knowledge on the impact of chemicals on environmental pollution and develop methods to control them.
- PSO6: Handle different kinds of Chemicals and instruments in laboratories and industries safely.

- PSO7: Develop skills to synthesise organic molecules propose reaction mechanism, characterise, categorise common chemicals.
- PSO8: Gain potential as entrepreneurs to plan a manufacturing unit and as a service provider.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ORGANIC CHEMISTRY – I	CH116	<ul style="list-style-type: none"> • Understanding the fundamentals of acidity and basicity. • Understanding the structure of organic compounds. • Fathom the acidity and basicity of organic molecules. • Provide the rudimentaries of stereochemistry. • Conceptualize the correlation between structure, acidity and reactivity. • Discern the reactivity of alkenes and alkynes. 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Network structure, hybridization, acidity, basicity and reactivity of organic molecules, identify the molecular structure. • Categorize molecules on the basis of hybridization; predict the acidity and basicity of the molecules based on functional groups; predict products for organic reactions. • Represent molecules dimensionally; infer the reactivity of molecules from their hybridization; Chart out the mechanism for organic reactions. • Distinguish the stereochemistry of molecules; rationalize the reactivities of alkenes and alkynes. • Evaluate and hypothesize the stability of molecular intermediates and alicyclic molecules. • Collaboratively assess the reactivity of molecules based on structure, stereochemistry, hybridization, 	Local developmental needs

				acidity and basicity; Build on understanding the reactivity and mechanism of molecules and reagents.	
2	ANALYTICAL CHEMISTRY – I	CH117	<ul style="list-style-type: none"> • To learn the safety practices and precaution in the laboratory while handling the chemicals and to maintain the laboratory hygiene and to learn the concepts of common waste chemical management. • To learn the various separation techniques to analysing the chemicals. • To develop the sound knowledge about the chromatographic techniques and its applications. • To illustrate the various types of titration and applications of indicators in volumetric analysis. • To learn the principle and applications of different types of thermal analysis and their significance in the analytical chemistry. • To learn and prepare the solution with different units and find out the accuracy of the concentration. 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Learn the safety practices in the laboratory while handling the hazardous chemicals. • Identify the appropriate separation procedures and its description. • Describe the principles of various chromatographic techniques and apply their knowledge to analyze the chemicals with suitable techniques. • Explain the concepts and types of titrations and calculate the strength of solutions using various methodology. • Outline the principle behind gravimetric analysis, thermal analysis and list out their applications. • Prepare solutions of desired concentration and employ them in estimations. 	Regional, developmental needs

3	ALLIED CHEMISTRY - I (BIOCHEMISTRY)	ACH110	<ul style="list-style-type: none"> • To understand the basics of solution chemistry • To categorize the organic compounds based on aromaticity, hybridization, bonding • To integrate the concept of organic molecules chemistry in biological systems • To tabulate acidity and basicity concepts based on various theories • To reflect chemical kinetics concept through biological systems • To build relationship between the drug actions with chemical structure 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Understand the basics of solution chemistry and knowledge of preparing solutions with different concentrations • Categorise the organic compounds based on aromaticity, hybridization, types of bonding • Integrate the concept of buffer solution in chemistry with biological systems • Tabulate acidity and basicity concepts based on various acid-base theories • Reflect the concept of chemical kinetics in biological systems • Develop relationship and synthetic methodology of drugs such as anesthetics and antibiotics and establish the mode of action with biological systems. 	Local developmental needs
4	INORGANIC CHEMISTRY – I	CH216	<ul style="list-style-type: none"> • To understand the basic atomic structure of elements their periodic properties and chemical bonding. • To evaluate the nature of bonding by applying various fundamental theories. • To learn the properties and applications of s and p block elements. 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Understand the behaviour and properties of the elements in the periodic table and comprehend them • Comprehend the fundamentals of electronic configuration, oxidation states, and specific properties of 	Local developmental needs

			<ul style="list-style-type: none"> • To compare and contrast the relationship between groups. • To understand the principles and theories of Acids and Bases. • To apply fundamental theories of acids and bases and identify the progress of the chemical reaction. 	<p>the major group elements.</p> <ul style="list-style-type: none"> • Compare and contrast the properties of acids and bases and justify their applications • Predict atomic structure, chemical bonding, Hybridization, and molecular geometry. • Analyze and understand the diagonal relationship between alkali and alkaline earth metals their properties and applications. • Evaluate the properties of elements based on their atomic structure, bonding nature, etc., and relate the uses and significance of the s and p block elements. • Devise and validate acid and base using the metal oxides and predict the feasibility of the reaction 	
5	PHYSICAL CHEMISTRY – I	CH217	<ul style="list-style-type: none"> • To understand the important behaviour of gases and liquids • Realize the concept of thermodynamics and appreciate the different terminologies used to describe the same • Appreciate the differences between real and ideal gases, the laws of thermodynamics and their applications • Derive the gas laws based by the kinetic theory of gases and 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Define the fundamental concepts of thermodynamics, kinetic theory of gases, and the theory of liquid state. • Discuss the nature of ideal and real gases, thermodynamic laws, the measurement of various properties in the liquid state, describe Joule-Thomson effect. • Use kinetic theory of gases to derive gas laws, apply Hess's Law 	Regional developmental needs

			<p>understand the collision theory of gaseous molecule</p> <ul style="list-style-type: none"> • Can describe the measurement of different properties of liquids • Estimate the enthalpy changes of chemical processes based on thermodynamics parameters 	<p>and Kirchoff's equation; distinguish between different thermodynamic terms, real and ideal gases; apply Linde's and Claudes Process for liquification</p> <ul style="list-style-type: none"> • Calculate various enthalpy changes based on thermodynamic parameters. • Formulate the collision theory of gas molecules, describe the measurement of properties of liquid, appraise the difference between C_v and C_p • Infer endothermic and exothermic processes, evaluate properties related to collision of gas molecules and different bond enthalpies 	
6	VOLUMETRIC ANALYSIS	PCH209	<ul style="list-style-type: none"> • To understand and apply the principle of volumetric analysis • To differentiate substances as primary and secondary standards • To learn the concept of indicators and their uses in volumetric analysis. • To learn to handle chemicals and apparatus related to volumetric analysis • To learn to develop methodologies to estimate the 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Match the theoretical aspects including principle with practical • Differentiate substances as primary and secondary standards and prepare them in required concentration. • Analyze the water samples for its hardness and other water quality parameters. • Classify the different types of volumetric estimations and the indicators required for them 	National developmental needs

			<p>amount of unknown substances</p> <ul style="list-style-type: none"> To differentiate the types of titration and their utilization in the estimations 	<ul style="list-style-type: none"> Calculate the amount of substances and interpret the results. Develop methods for the estimation of substances volumetrically 	
7	ALLIED CHEMISTRY - II (BIOCHEMISTRY)	ACH210	<ul style="list-style-type: none"> To define and understand the basic principles of chromatography and separation techniques. To learn the role of electrophoresis in biochemistry To understand the basics of nuclear chemistry and its importance in biomedical field To correlate the chemistry of carbohydrates and their structural differences To link structure and function relations of proteins in biological systems To learn the importance of coordination chemistry in biochemistry 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to Define and understand the fundamental principles of chromatography and its separation techniques. Correlate the Structural chemistry of carbohydrates in aldoses and ketoses Relate the structure and functions of proteins in biological systems Explain the structural diversity of aminoacids based on various medium (neutral, acidic, basic) and proteins 3D-structures in biochemistry Apply the concept of metal-protein coordination chemistry in oxygen transport and photosynthesis process. Detect the half-life time of radioactivity and devise transmutation of radioactive nucleus 	National developmental needs
8	ALLIED CHEMISTRY LAB WORK	PACH209	<ul style="list-style-type: none"> To prepare acid and base solutions with various concentrations 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to 	National developmental

	(BIOCHEMISTRY)		<ul style="list-style-type: none"> • To understand and select the suitable acid-base indicators and redox indicator based on titration type • To analyze the special elements present in the unknown organic compound • To differentiate aromatic/aliphatic compounds with chemical tests • To identify functional group present in any organic compound systematically • To estimate the concentration of the unknown solution under study 	<ul style="list-style-type: none"> • Prepare and standardize acid and base solutions with various concentrations • Understand and select the suitable acid-base indicators and redox indicator based on titration type • Analyze the presence of special elements in the organic compound • Identify functional group present in any organic compound systematically • Analyze the concentration of the unknown solutions under study • Apply the concepts of organic chemistry reactions in determining organic compound 	needs
9	ORGANIC CHEMISTRY – II	CH316	<ul style="list-style-type: none"> • Understanding substitution and elimination reactions. • Understanding metal carbon bonds 	<ul style="list-style-type: none"> • 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. 	Global developmental needs

				<ul style="list-style-type: none"> Develop synthetic routes using organometallic reagents for organic molecules. 	
10	INORGANIC CHEMISTRY – II	CH317	<ul style="list-style-type: none"> To have a sound knowledge about structure and shape using VB and MO theory To know about Chemistry of group-14 and 15 and its applications To understand the importance of Nuclear chemistry and its applications 	<ul style="list-style-type: none"> The general characteristics, electronic configuration, and oxidation states of Group 14 and Group 15 elements are introduced to students. Using VB and MO theory, the learner can comprehend the molecule's structure and shape. The relevance of nuclear chemistry and its applications can be comprehended by the learner. Students can demonstrate the manufacture and structure of oxo acids of nitrogen and phosphorus. Students can use the 'Q' Value to calculate the amount of energy produced in a nuclear reaction. Students will be able to detect and quantify radioactivity, as well as determine the use of particle accelerators and radioisotopes as tracers. 	National developmental needs
11	ALLIED CHEMISTRY-I (MATHS AND PHYSICS)	ACH308	<ul style="list-style-type: none"> To learn the electronic configuration of atoms, periodicity of elements and Chemical bonding To understand the Structure and bonding of Co-ordination compounds 	<ul style="list-style-type: none"> To understand the fundamental concepts of Inorganic chemistry and learn to apply them Explain the shapes and properties of elements based on their periodic properties 	Regional developmental needs

			<ul style="list-style-type: none"> To learn the principles of Organic Chemistry, Organic reactions and mechanism 	<ul style="list-style-type: none"> Compare the different types of bonding and analyses the molecules based on them Explain the concepts of coordination chemistry and compile the role of elements in human body Understand the fundamentals of organic chemistry and classify the compounds Compare different organic reactions and evaluate their applications 	
12	ORGANIC CHEMISTRY – III	CH416	<ul style="list-style-type: none"> Understanding the fundamentals of organic spectroscopy. Understanding Aromatic compounds. Understanding the reactivities of carbonyl compounds. Learning radical reactions. 	<ul style="list-style-type: none"> Describe and understand the radical stability and radical reactions of alkyl substituents and benzene Relate and infer information organic molecules using the fragmentation pattern of functional groups by mass and IR spectra Justify the reactivity of aromatic systems and its aromaticity behaviour in benzene ring and heterocyclic systems. Attribute substituted benzene undergoing, nucleophilic aromatic substitution and addition-elimination reactions. Summarize and illustrate relative reactivities of carboxylic acids and their derivatives Discuss and devise the reaction of acyl halides, anhydrides, and esters 	Regional developmental needs

13	PHYSICAL CHEMISTRY – II	CH417	<ul style="list-style-type: none"> • To understand the important laws of thermodynamics and their implications in chemical systems • To learn the importance of chemical potential and its significance • To understand the basic concepts and importance of phase equilibria • To learn the basics of colloids, surfactants and solutions 	<ul style="list-style-type: none"> • Understand the laws of thermodynamics and apply in to simple chemical system • Describe and illustrate the importance of chemical potential and analyse their significance in simple chemical reaction • Relate K_p, K_c and K_x and evaluate free energy and equilibrium constant for chemical reactions • Understand the basic concepts in phase equilibrium and construct the two-component phase diagram for simple eutectic system • Know the basic concepts in colloids and surfactants and illustrate the electrochemical properties in colloids • Derive and interpret the laws of solutions and apply in to solvent extraction and determine the hydrolysis constant 	National developmental needs
14	QUALITATIVE INORGANIC ANALYSIS	PCH408	<ul style="list-style-type: none"> • To enable the student to systematically identify the cations and anions present in a inorganic mixture • To know the appropriate chemical procedures and apply them to prepare some familiar complexes 	<ul style="list-style-type: none"> • Understand the systematic inorganic salt analysis based on interfering and non-interfering acid radicals and their elimination procedure • Justify the progress of group specific cations with specific reagents present for specific cations • Integrate the importance of pH concepts involved in group 	National developmental needs

				<p>separation and on solubility</p> <ul style="list-style-type: none"> • Predict the appropriate reactions and reagents for specific cation with group specific reagents • Adapt various interfering elimination procedure for the attainment of original solution and cationic radicals • Adapt appropriate complexation process for the attainment of various metal complexes 	
15	ALLIED CHEMISTRY - II (MATHS AND PHYSICS)	ACH409	<ul style="list-style-type: none"> • To understand the principles of rate of chemical reactions and thermodynamics • To understand the basic electrochemistry, pH and buffer solutions • To learn the basic nuclear chemistry and its applications • To learn the chemistry of carbohydrate, amino acids, proteins and enzymes 	<ul style="list-style-type: none"> • Describe the concepts of chemical kinetics and classify chemical reactions • Understand the scope of thermodynamics and apply them for practical utilities • Explain the various electrochemical processes and compare them • Tabulate materials as acids and bases and summarize their applications • Differentiate types of nuclear reactions and evaluate their adverse effects • Explain the role of biomolecules and classify them 	National developmental needs
16	ALLIED CHEMISTRY LAB WORK (MATHEMATICS AND PHYSICS)	PACH409	<ul style="list-style-type: none"> • To learn the basics of analysis involved in estimating the amount of substances. • To acquire the practical knowledge about the analysis 	<ul style="list-style-type: none"> • Describe and determine the volumetric analysis and preliminary characteristics of organic compounds. 	Regional developmental needs

			of organic compounds	<ul style="list-style-type: none"> • Calculate the concentration of an acid from the volume of base that neutralizes it and also Detect the extra element(s) present in organic compounds • Use the results from a titration experiment to calculate the unknown concentration of a solution and also Identify the functional groups of organic compounds. • Recall how to calculate the number of moles from concentration and volume and also prepare and devising the confirmative experiments based on functional groups. • Recognize the organic compound by comparing their confirmatory test. 	
17	ORGANIC CHEMISTRY - IV	CH546	<ul style="list-style-type: none"> • Understanding the reactivities of carbonyl compounds. • Understanding oxidation and reduction reactions 	<ul style="list-style-type: none"> • 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, 	Global developmental needs

				<p>enolate ion formation process and its selectivity in product formation</p> <ul style="list-style-type: none"> • 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 	
18	INORGANIC CHEMISTRY - III	CH416	<ul style="list-style-type: none"> • To study the chemistry of main groups elements • To understand the variation in the periodic behavior • To learn the methods of extraction of lanthanides and actinides 	<ul style="list-style-type: none"> • Students comprehend why and how lanthanide and actinide contractions occur. • The chemistry of ozone, as well as allotropes of oxygen and sulphur, may be mastered by students. • By studying the synthesis, characteristics, and structure of interhalogen compounds, students will grasp and appreciate the differences in electronegativity among halogens. • The students can assess periodic trends, chemical reactivity and physical properties of d and f-block elements • Students are able to tell the difference between 3d and 4f block components. 	National developmental needs

				<ul style="list-style-type: none"> The variations in ionic radius, coordination number, metal-metal bonding, and oxidation state between 3d, 4d, and 5d block elements can be compared and contrasted by students. 	
19	PHYSICAL CHEMISTRY - III	CH547	<ul style="list-style-type: none"> To have a good foundation about the quantum chemistry and learn the application to simple system To learn the concepts regarding chemical kinetics and apply them for kinetics related problems in chemical reactions To learn the importance of photophysical and photochemical processes 	<ul style="list-style-type: none"> illustrate the concepts of conductance, their measurement and their applications Possess ability to enumerate the applications of ionic equilibria like buffer, hydrolysis of salts illustrate the foundations of electrochemistry, the reactions of a cell and different electrodes apply Nernst equation and also demonstrate the applications of electrochemical series. demonstrate the applications of electrochemistry like Fuel cells 	National developmental needs
20	ANALYTICAL CHEMISTRY - II	CH548	<ul style="list-style-type: none"> To study the basics, principles and instrumentation of spectroscopy. To learn the basics, principles of polarography and amperometric techniques. 	<ul style="list-style-type: none"> Explain and evaluate the principle and instrumentation of colorimetric analysis and UV-Visible spectroscopy, various factors involved in analysis and its applications. Understand the fundamentals of mass spectrometry including fragmentation pattern of simple molecules and how to determine molecular formula and molecular weight of various compounds. 	National developmental needs

				<ul style="list-style-type: none"> • Understand about the molecular vibrations in IR and Raman spectroscopies and applied to structural elucidation, detection of presence of hydrogen bonding etc. • Illustration of NMR spectroscopy and application for structural elucidation and ESR spectroscopy for coordination compounds. • Comparing Atomic Absorption spectroscopy and Atomic Emission spectroscopy. Application of AAS like Determination of Mg in water and Lead in Petrol by AAS. • Evaluation of polarographic waves for qualitative and quantitative applications. Explore amperometric titration and its applications. 	
21	PHARMACEUTICAL CHEMISTRY	CH549A	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 and learn to employ them whenever needed • Observe the cause and treatment of 	Global developmental needs

				<p>various disorders and recommend measures to prevent or rectify them</p> <ul style="list-style-type: none"> • Explain the effectiveness of drugs and hypothesize drug designing strategies 	
22	ELECTIVE PAPER- FORENSIC CHEMISTRY	CH549B	<ul style="list-style-type: none"> • To understand the basic knowledge about forensic. • To learn how chemistry supports in crime scene investigation and detection. • To understand the determination of the crime using serology and identification of drugs usage. 	<ul style="list-style-type: none"> • The relevance of chemistry in forensic science is well grasped by the students. • The students will be able to distinguish between the tests that were employed to obtain the fingerprint for analysis. • The students will comprehend the procedures for gathering material evidence from various things such as paint and glass. • The students can explain the notion of antigen–antibody interactions and how it may be used to identify species and drugs present in the body. • The students can describe the various forensic tests which are used to identify a stain in blood. • Students will be able to define standard field sobriety tests used to evaluate drug impairment, as well as the societal implications of drug and importance of chemistry in toxicology. 	National developmental needs
23	BIOINORGANIC CHEMISTRY	CH549C	<ul style="list-style-type: none"> • To understand the scope of bioinorganic chemistry 	<ul style="list-style-type: none"> • Compare the scope of bioinorganic chemistry 	National developmental

			<ul style="list-style-type: none"> To learn the chemistry of metalloporphyrin, metalloenzymes. To know the significance of metals in medicine 	<ul style="list-style-type: none"> Discover the chemistry of metalloporphyrin Describe the chemistry of metalloenzymes Explain the significance of metals in medicine Define nitrogen fixation and photosynthesis Creating awareness and diagnosis, therapy for cancer 	needs
24	PROTEIN CHEMISTRY	CH550B	<ul style="list-style-type: none"> To learn the chemistry of Amino acids and proteins. To learn the importance of enzymes and enzyme catalysis 	<ul style="list-style-type: none"> Explain the general concepts of drug design and discovery Illustrate the essential concepts of SAR/QSAR Explain the different concepts of computer aided drug design Demonstrate how receptors and enzymes can act as targets for drug discovery 	Regional developmental needs
25	APPLIED CHEMISTRY	CH550A	<ul style="list-style-type: none"> To inculcate the latest sophisticated analytical techniques To characterize the solid state materials which found applications in day-to-day life. 	<ul style="list-style-type: none"> Gain knowledge about the latest sophisticated analytical techniques Correlate the amount of calcium and magnesium in soil and water Relate and assess the applications of voltammetry Analyse the solid materials which found application in our day-to-day life Understand and analysis of the food products, food adulteration and preservation 	National developmental needs

				<ul style="list-style-type: none"> • Develop innovation methods to produce soft water for industrial use and potable water at cheaper cost 	
26	INORGANIC CHEMISTRY - IV	CH545	<ul style="list-style-type: none"> • To study the chemistry of coordination compounds and organometallic compounds • To understand the chemistry of bioinorganic molecules and chemistry of solids. 	<ul style="list-style-type: none"> • Using diverse theories of coordination compounds, students may acquire the fundamentals concepts of ligand types, coordination numbers, and complicated geometries. • Students can differentiate between low spin and high spin complexes, as well as analyze the applications of spectrochemical series, Jahn-Teller distortion, and Trans effect • Students can learn about the various organometallic compounds and their synthetic applications such as Wilkinson catalyst and Fischer-Tropsch reaction • Students will be able to comprehend the significance of nitrogen fixation and cycle, as well as the structure and functions of porphyrin ring systems and metalloenzyme biochemistry. • In solid states, students can describe the fundamental crystal systems and their symmetries. • To get a better understanding of the structural and chemical characteristics of organometallics, which serve as a link between 	National developmental needs

				inorganic and organic chemistry.	
27	PHYSICAL CHEMISTRY - IV	CH641	<ul style="list-style-type: none"> To know the fundamentals theories that govern the electrolytic conductance in solids and solutions and apply them to solve problems related to it. To learn about the acids and base equilibria To know about the different types of electrochemical cells and their importance 	<ul style="list-style-type: none"> illustrate the concepts of conductance, their measurement and their applications enumerate the applications of ionic equilibria like buffer, hydrolysis of salts illustrate the foundations of electrochemistry, the reactions of a cell and different electrodes apply Nernst equation and also demonstrate the applications of electrochemical series. demonstrate the applications of electrochemistry like Fuel cells 	National developmental needs
28	POLYMER CHEMISTRY	CH642A	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	Global developmental needs

				<ul style="list-style-type: none"> • 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. 	
29	INDUSTRIAL AND ENVIRONMENT CHEMISTRY	CH642B	<ul style="list-style-type: none"> • To introduce the students about industrial extraction processes. • The pollution induced by the industrial development and the care towards the environment is focused. 	<ul style="list-style-type: none"> • Understand and explain the various processes involved in chemical industries • Observe and apply the chemical principles of metallurgical process • Compare the causes of various types of pollution its effects and propose to adapt eco-friendly practices to mitigate pollution • Survey the extent of aquatic pollution and devise methods to sustain the aquatic ecosystem • Observe the factors responsible for aquatic and air pollution and compare them • Develop methods to mitigate aquatic and air pollution 	National developmental needs
30	GREEN CHEMISTRY	CH642C	<ul style="list-style-type: none"> • To understand the environmental concern and shrinking resources • To learn the environmental friendly products and procedure. 	<ul style="list-style-type: none"> • Gain knowledge about the environmentally friendly products and procedure. • Appraising Micro Wave and Ultra sound assist organic synthesis 	Global developmental needs

			<ul style="list-style-type: none"> To take a natural view of different chemical processes 	<ul style="list-style-type: none"> Relate and assess the applications of green synthesis. Comparison of heterogeneous and homogeneous catalysis and photocatalysis Analyse the organic compounds which are found in applications of green synthesis Understand the environmental concerns and shrinking resources Designing next generation agrochemicals from nature, using green reagents and biocatalysts. 	
31	MATERIALS CHEMISTRY	CH642D	<ul style="list-style-type: none"> To understand the basic concepts of crystal structures and their characterization To learn about different properties of solid state materials and their characteristic structural features 	<ul style="list-style-type: none"> Explain and rationalise chemical bonding in the solid state and how structure affects the properties of materials. Understand basic crystallographic and crystal chemical concepts such as unit cells, Bravais lattices and apply the Bragg's equation. Elucidate and contemplate the physical properties of a range of functional materials including superconductors, semi-conductors, ferroelectric and piezoelectric materials Synthesis and analysis of nanomaterials by gas phase and chemical methods. Analyse and understand the size relationships of chemistry of nanomaterials properties and its 	National developmental needs

				<p>applications.</p> <ul style="list-style-type: none"> • Evaluate the properties of nanomaterials based on quantum size effect and physical properties and to relate the uses • Formulate and validate the chemical and catalytic aspects of nanostructured adsorbent materials. 	
32	<p>WATER CHEMISTRY AND INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE</p>	CH642E	<ul style="list-style-type: none"> • To learn the principles of Water Chemistry and industrial water treatment process • To understand the principles and properties of Inorganic materials of Industrial importance. • To study the significance and its applications of Inorganic materials of Industrial importance. 	<ul style="list-style-type: none"> • Identify the water quality parameters learn to calculate them • Describe the various processes involved in water treatment and compare them • Understand the fundamental processes involved in glass manufacture and apply them for practical applications • Differentiate the types of silicates and ceramics and classify them • Explain and analyse the forms of cement and fertilizers available and formulate their uses • Understand the various types of coatings available and learn to apply them 	<p>Regional developmental needs</p>
33	<p>CHEMISTRY OF DRUG DESIGN</p>	CH642F	<ul style="list-style-type: none"> • Introduce the basic concepts of drug design and discovery process • Learn the techniques of SAR/QSAR 	<ul style="list-style-type: none"> • Explain the general concepts of drug design and discovery • Illustrate the essential concepts of SAR/QSAR 	<p>National developmental needs</p>

			<ul style="list-style-type: none"> • Introduce the concepts of molecular modeling • Introduce the concepts of receptor inhibition and enzyme inhibition in drug design • On successful completion of this Course, students will be able to 	<ul style="list-style-type: none"> • Explain the different concepts of computer aided drug design • Demonstrate how receptors and enzymes can act as targets for drug discovery 	
34	CHEMISTRY LAB WORK – III GRAVIMETRIC ESTIMATIONS AND ORGANIC ANALYSIS	PCH621	<ul style="list-style-type: none"> • To acquire sound practical knowledge in the gravimetric estimations. • To prepare the students for analysing various organic compounds through systematic analysis. • To enable the student to understand the principles behind the preparations of different organic compounds. 	<ul style="list-style-type: none"> • demonstrate the the necessary practical skill to perform quantitative estimation gravimetrically • analyze and identify qualitatively the functional group and nature of the given organic compound • set-up synthesis of simple organic reactions 	Regional developmental needs
35	CHEMISTRY LAB WORK - IV PHYSICAL CHEMISTRY EXPERIMENTS	PCH622	<ul style="list-style-type: none"> • To understand about physical behaviour of compounds. • To impart sound practical knowledge in understanding the reaction pathways and calculations involved in them. 	<ul style="list-style-type: none"> • apply the theoretical knowledge to measuring and determining the rate, order, rate constants of chemical reactions • use the concept of distribution coefficient • Apply the concept of optical activity to measure the rate constant for hydrolysis of sucrose • Know and illustrate the working principle and functions polarimeter, conductometer, potentiometer, colorimeter and pH meter 	National developmental needs

				<ul style="list-style-type: none"> • enumerate the basics in electrochemistry and calculate the dissociation constant and equivalent conductance of a given solution • Construct the TC diagram for phenol water system and estimate the CST 	
36	CHEMISTRY OF DRUGS & DISEASES	NCH504	<ul style="list-style-type: none"> • To learn the basic scientific facts about common drugs. • To understand about different types of diseases and their treatments for a healthy living. 	<ul style="list-style-type: none"> • Define the terms used in pharmaceutical chemistry and be able to identify them in day to day life • Identify some common drugs and their uses of specific diseases • Recognize the cause, symptoms of various diseases and learn to apply them • Describe the role of some indian medical plants and their uses and to summarize the benefits of medicinal compounds • Differentiate the types of drugs available and choose to use them appropriately • Understand and analyze the first aid procedures available and plan to utilize them efficiently 	National developmental needs
37	CHEMISTRY IN EVERY DAY LIFE	NCH604	<ul style="list-style-type: none"> • To appreciate the importance of chemistry in day-to-day appliances • To understand the role of chemicals involved in different substances, their uses and 	<ul style="list-style-type: none"> • List the different types of soil and classify the fertilizers • Recognize the different household chemicals used and analyse their adverse effects 	Local developmental needs

			precautions to be taken.	<ul style="list-style-type: none">• Tabulate the variety of glasses and ceramics available and apply them for specific purpose intended• Identify the various types of adulterants present in food and demonstrate to identify them• Evaluate the chemicals used in various cosmetic items and compare them• Identify the components present in different plastics and hypothesize its uses	
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Name of the Programme: M. Sc. Chemistry

Programme Outcomes at Postgraduate Level

Programme will be able to:

1. Demonstrate intense knowledge in their discipline
2. Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
3. Develop expertise in their field of study through projects and research activities
4. Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
5. Develop social and ethical responsibility in the transfer and management of knowledge

Programme Specific Outcomes

1. Understanding comprehensively the various principles and theories in the domain of Chemistry and learn to apply it in the field of production, formulation and research.
2. Summarize, compare and contrast the structures, properties, types and applications of chemical entities by understanding the stereochemistry, structures, reactivity etc
3. Learn to solve equations and to correlate the various concepts and facts about chemical systems and their behavior and arrive at proper conclusions and inferences.
4. To evaluate, criticize and defend the theories, concepts and methods / processes and suggest the modification of the same.
5. To formulate / create - methods / processes / designs in the field of Chemistry with improved efficacy and performance through carrying out individual research projects

6. Acquire adequate skills to design and synthesize new organic drug molecules to cater to the needs of pharma and other industries and to impart industrial training to become entrepreneurs and towards establishing green/sustainable practices

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ORGANIC CHEMISTRY – I	CH716	<ul style="list-style-type: none"> To know about the nature of aromaticity in the compounds To learn the kinetic and non-kinetic methods of determining organic reaction mechanism. To understand the substitution in aromatic and aliphatic reactions. 	<ul style="list-style-type: none"> Define and distinguish the organic compounds based on the nature of aromaticity and characterizing them using NMR technique Interpret the intermediates involved in various organic reactions and integrate the kinetic and non-kinetic methods in determining organic reaction mechanism. Relate and categorize the nucleophilic substitutions in aromatic and aliphatic molecules with mechanism Predict the product between electrophilic substitution in aromatic and aliphatic molecules reactivity and products formation with mechanism Predict and write the addition and elimination reactions and their mechanisms Formulate the synthetic routes based on addition/elimination reactions in synthetic organic chemistry 	Regional developmental needs

2	INORGANIC CHEMISTRY – I	CH717	<ul style="list-style-type: none"> • To impart the knowledge about the structure of materials and their significance. • To understand the theories of coordination complexes and their importance. • To study the basic chemistry of rare earth elements and nano materials 	<ul style="list-style-type: none"> • Gain knowledge about the structure and bonding of Inorganic compounds like polyacids, Inorganic Polymers, polysulphur – nitrogen and their significance • Correlate the structure, bonding, stability and applications of metallocarboranes and Metal Clusters • Relate and asses the applications of organometallic compounds in the field of synthetic chemistry and catalysis • Analyse the solid materials with defects that can be used in field of electronic industries foe designing energy materials. • Understand the Solid-state Transformation, its thermodynamic, kinetics and nucleation in solid state materials • Design and synthesis the energy producing nano materials and energy storage nanomaterials to meet the energy crisis in the future 	National developmental needs
3	PHYSICAL CHEMISTRY – I	CH718	<ul style="list-style-type: none"> • To study the basic concepts of various theories in chemical kinetics • To illustrate the mechanism of acid, base and enzyme catalyzed reaction and their applications. • To apply and analyse the 	<ul style="list-style-type: none"> • Understand the various theories of kinetics and compare their applications to reactions. • Compare and contrast the different catalytic reaction and analyse their applications. • Hypothesize mechanistic pathways for reactions based on the kinetic 	National developmental needs

			<p>kinetics of complex reactions and fast reactions by various methods.</p> <ul style="list-style-type: none"> • To learn and apply the symmetry elements and symmetry operations in molecules • To understand the concepts of selection rules in for transitions and find out the vibrational modes of the molecules. • To construct the character table for simple molecules. 	<p>parameters.</p> <ul style="list-style-type: none"> • Learn and sketch the different symmetry elements and evaluate the implications of symmetry operations in molecules. • Assess the vibrational modes of molecules and thereby formulate the selection rules for transitions • Develop the character table and analyse the symmetry operations of molecules 	
4	ELECTIVE – I: ANALYTICAL CHEMISTRY	CH719A	<ul style="list-style-type: none"> • To study the different types of molecular spectroscopy and NMR spectroscopy and its applications • To study the analytical techniques, instrumentation and applications 	<ul style="list-style-type: none"> • Explain and evaluate the theory and principle of electro analytical techniques, various factors involved in analysis and its applications. • Understand the fundamentals of microwave spectroscopy and how to identify molecules using structural factors like moment of inertia and intermolecular distances. • Explore the vibrating diatomic molecule, the simple harmonic oscillator, the anharmonic oscillator, and their applications in spectroscopy. • Illustration of Infrared Spectroscopy - Group frequencies Rotational and Vibrational Raman • Application of advanced 	Regional developmental needs

				<p>chromatographic separation technique principles for isolation and characterization of compounds.</p> <ul style="list-style-type: none"> Identify and structurally categorize new using X-ray diffraction. Analyze nanomaterials using advanced electron microscopy characterization techniques. 	
5	ELECTIVE – II: GREEN CHEMISTRY	CH719B	<ul style="list-style-type: none"> To know eco-friendly methods of synthesis. Understanding the synthesis of any type of organic compounds with the revolution of Green Chemistry 	<ul style="list-style-type: none"> Understand and compare the eco-friendly methods of synthesis. Appraising the measurement, Prevention and control of life-cycle assessment Relate and assess 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 nature, using green reagents and bio catalyst. 	Global developmental needs
6	ELECTIVE – III: PHARMACEUTICAL CHEMISTRY	CH719C	<ul style="list-style-type: none"> To understand the composition and the kinetics of drugs To know the different types of drugs and its composition 	<ul style="list-style-type: none"> Learn the terminologies and mechanism of action of drugs and analyse them Discuss about the different types of drugs and their applications and evaluate their structures 	Regional developmental needs

				<ul style="list-style-type: none"> • Explain the causes of certain ailments and treatment and relate them • Understand the extraction and uses of some specific drugs and categorize them • Enumerate various therapeutic agents and combine them for potential applications • Tabulate the various haematological factors assess their effects on human body 	
7	ORGANIC CHEMISTRY – II	CH818	<ul style="list-style-type: none"> • To understand the addition, elimination, reduction and oxidation reaction mechanisms • To learn the concept of bonding, structure and reactivity of organic molecules 	<ul style="list-style-type: none"> • Define the concept of chirality and categorize the structure of organic molecules through stereo isomerism and various molecular 3D-models and stereochemical rules • Annotate and integrate the conformations and reactivity, chirality concepts involved in cyclic, acyclic, bicyclic systems • Relate the product formation from various oxidation reactions and various oxidizing reagents with detailed mechanism • Write and justify the product of reduction reactions and various reducing reagents with detailed mechanism. • Illustrate the various selective naming reactions with mechanistic route and predict the product formation • Justify the synthetic organic chemistry problems and predict the product with 	National developmental needs

				specific stereochemistry in oxidation, reduction and selective naming reactions	
8	INORGANIC CHEMISTRY – II	CH819	<ul style="list-style-type: none"> To study the concept of coordination Chemistry, stability of the complexes and stereochemistry of complexes. To study about structure and bonding in coordination complexes. To learn the use of Inorganic Compounds in Biological systems To study the electron transfer processes and substitution reactions in Coordination complexes 	<ul style="list-style-type: none"> Deduce the reaction mechanism and stability of the coordination compounds Understand the theories of coordination compounds and relate their importance. Know the basic chemistry of various elements and their functions in biological systems Comprehend and integrating the role of coordination compound in living system Analyze the basic application of electronic spectroscopy of complexes and apprise the stability of coordination compounds Design and synthesis coordination compounds of biological and medicinal importance 	National developmental needs
9	PHYSICAL CHEMISTRY – II	CH820	<ul style="list-style-type: none"> To study and apply the fundamentals and principles of quantum mechanics in chemistry To illustrate the physical significance of the wave functions and Schrodinger equation To learn and analyze the principles and significance of partial molar property and fugacity. To learn the fundamentals and 	<ul style="list-style-type: none"> Understand and explain the principles of quantum mechanics and apply it to chemical systems. Describe the physical significance of the wave functions and apply the Schrödinger equation for some simple systems Understand the concepts and significance of thermodynamics and evaluate their applicability to chemical systems. Assess the different statistical 	National developmental needs

			<p>applications of statistical thermodynamics.</p> <ul style="list-style-type: none"> To understand and assess the concepts of equilibrium and non – equilibrium thermodynamics in various phenomenon. To apply non – equilibrium thermodynamics to chemical and biological systems. 	<p>approaches to chemical system and evaluate the thermodynamic quantities in terms of partition function.</p> <ul style="list-style-type: none"> Recognize the principles that govern equilibrium and non-equilibrium thermodynamics and analyze the impact on non-equilibrium thermodynamics in electrokinetic and thermoelectric phenomenon Integrate the concepts and its implications of non – equilibrium thermodynamics to chemical and biological systems 	
10	ELECTIVE –I RESEARCH METHODOLOGY	CH821A	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
11	ELECTIVE-II HETEROCYCLIC	CH821B	<ul style="list-style-type: none"> To learn the nature and reactions of heterocyclic 	<ul style="list-style-type: none"> Acquire basic knowledge on classifications of Heterocyclic 	National developmental

	CHEMISTRY		<p>compounds</p> <ul style="list-style-type: none"> To understand the classification and significance of heterocyclic compounds 	<p>Compounds, nomenclature of Heterocyclic Compounds, structural characteristics, physical properties, synthesis of Heterocyclic Compounds and chemical reactions.</p> <ul style="list-style-type: none"> Analyze and discuss the Information and data related to Heterocyclic Compounds. Detecting and leading the reactivity and stability of hetero aromatic compounds. Demonstrate the proficiency in designing reaction schemes to achieve six and seven membered ring heterocycles. Apply these hetero aromatic compounds in the synthesis of important industrial and pharmaceutical compounds. Understand the chemistry of large heterocyclic structures and plan to synthesize them 	needs
12	ELECTIVE – III BIO - ORGANIC CHEMISTRY	CH821C	<ul style="list-style-type: none"> To enable the student to understand and appreciate the importance of biomolecules. To understand the techniques involved in the extraction and methods of determination of structure of natural products. To describe the structure and function of nucleic acids To learn the synthetic procedure of alkaloids and terpenoids and their 	<ul style="list-style-type: none"> Understand and know the importance of the biomolecules Apply the extraction techniques and elucidate the structure of natural products. Describe the structure and function of DNA and RNA and justify the denaturation of nucleic acid Synthesis a common alkaloid and terpenoids and know their importance Design the synthetic route of steroids and interpret their functions in biological 	National developmental needs

			<p>applications.</p> <ul style="list-style-type: none"> To synthesis the steroids compounds and interpret their biological role. To Illustrate the method of synthesis of flavonoids 	<p>system</p> <ul style="list-style-type: none"> Describe the general method of synthesis of anthocyanins and flavonoids. 	
13	ORGANIC CHEMISTRY PRACTICAL – I	PCH813	<ul style="list-style-type: none"> To learn the separation of an organic compound from the mixture and identify them using various chemical tests. To enable the student to learn the methods of preparation for some organic compounds. 	<ul style="list-style-type: none"> Identify and relate the nature of the organic compound mixture given based on solubility and reactivity Demonstrate the systematic analysis and separation of organic compound mixture into individual components Experimenting organic chemistry theoretical knowledge into laboratory tests with respect to addition, oxidation, substitution reactions and other reactions Correlate functional group and corresponding derivatives formed during qualitative analysis in the laboratory Implement synthetic approach with single stage preparations in laboratory using oxidation, reduction etc. Build and reflect the synthetic ability to prepare and purify organic compounds from single stage reactions 	Regional developmental needs
14	INORGANIC CHEMISTRY PRACTICALS – I	PCH814	<ul style="list-style-type: none"> To learn the basic principles of qualitative analysis of an inorganic mixture To understand and apply the principles of complexometric titrations. 	<ul style="list-style-type: none"> Understand the methodology of determining ions using complexometric titrations. Devise methods to prepare a complex from simple starting materials Employ a standard procedure to identify 	National developmental needs

				<p>the common and rare ions</p> <ul style="list-style-type: none"> • Demonstrate the ability to identify and separate any ions from any mixtures by evolving the procedure • Analyze the data obtained through various experiments and deduce conceptual explanations for theoretical concepts 	
15	PHYSICAL CHEMISTRY PRACTICALS – I	PCH815	<ul style="list-style-type: none"> • To learn various physical and electrochemical methods to perform chemical measurements 	<ul style="list-style-type: none"> • Knowledge of measuring and determining the rate, order, rate constants of chemical reactions experimentally. • Understand and use the concept of distribution coefficient to measure the equilibrium constant. • Applying the concept of optical activity to measure the rate constant and to compare the strength of acids. • Experimenting the relation between the amount of molecule adsorbed on the surface of a adsorbent and apply the concepts of adsorption in the field of catalysis. • Construct the phase diagram and apply it to metallurgical industry. • Estimate the minimum energy required for the molecules to undergo chemical reactions. • Evaluate the speed of chemical reactions in terms of temperature, concentration, and ionic strength. 	National developmental needs

				<ul style="list-style-type: none"> Apply chemical kinetics in solving problems related to dosage and stability of drugs, absorption, distribution, and elimination of drugs from the body. Linking between the theoretical concepts with the experimental data obtained in the chemical kinetics. 	
16	REAGENTS IN ORGANIC CHEMISTRY SSP	CH817SP1	<ul style="list-style-type: none"> To know the mechanism of organic reaction by using the various reagents To understand the concept of stereochemistry of reactions 	<ul style="list-style-type: none"> Choose appropriate reagent based on the structure and functional group of the reactant molecule. Deduce mechanistic route for the reaction of reagent with reactant molecule and formation of products Detect the formation of products with specific stereochemistry in organic molecules based on the reaction type. 	Regional developmental needs
17	ORGANIC CHEMISTRY – III	CH918	<ul style="list-style-type: none"> To learn photochemical reactions, pericyclic reactions and their importance. To learn the synthetic application of Organometallic compounds 	<ul style="list-style-type: none"> Identify the nature of rearrangement involved and intermediates generated in various organic molecules; Writing mechanism for the rearrangement involved in organic molecules. Interpret the role of reagents in multistep organic synthesis and correlate the next synthetic work up involved. Integrate the concept of organometallic compounds as homogeneous, heterogeneous catalysts and reagents in organic functional group conversions. Illustrate list of electronic transitions involved in various organic molecules and correlate them with photochemical 	National developmental needs

				<p>reactions and based on their photophysical processes.</p> <ul style="list-style-type: none"> • Invent corresponding mechanism based on thermal/photochemical condition and predicting the product with specific stereochemistry in various pericyclic reactions. • Build the synthetic route theoretically for a given reactant and product with set of reagents. 	
18	INORGANIC CHEMISTRY – III	CH919	<ul style="list-style-type: none"> • 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, ESR and Mossbauer techniques in to simple inorganic systems. • To learn the instrumentation of advance inorganic spectroscopy techniques. 	<ul style="list-style-type: none"> • 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 • 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 	local, regional ,national and global developmental needs

				compound based on the spectroscopic data	
19	SPECTROSCOPY	CH920	<ul style="list-style-type: none"> To understand the concepts of spectral techniques To apply these techniques for the quantitative and structural analysis of organic compounds 	<ul style="list-style-type: none"> Demonstrate the understanding of electromagnetic spectrum and applied to study of chemical molecules. Validate knowledge of the principles of mass spectrometry and instrumentation. Predict number of signals, splitting pattern in the proton NMR of a compound and interpret NMR spectra of simple molecules. Identify the absorption frequencies of major functional groups and comprehend the electronic absorption and apply to interpret IR and UV-Vis spectra of simple organic compounds. Develop an ability for combined usage of mass spectrometry, UV-Vis., IR and NMR for structural elucidation. Analyse, evaluate and interpret the spectroscopic data effectively 	Regional developmental needs
20	ELECTIVE-III: INORGANIC PHOTOCHEMISTRY & MATERIALS SCIENCE	CH921A	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	National and global developmental needs

			<p>the knowledge on composition, molecular and electronic structures of inorganic compounds.</p> <ul style="list-style-type: none"> • Students will know to identify and quantify the course of photophysical and photochemical processes. 	<ul style="list-style-type: none"> • 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. 	
21	ELECTIVE – II: POLYMER CHEMISTRY	CH921B	<ul style="list-style-type: none"> • To gain knowledge in the preparation, properties, characterization and uses of polymers. • To appreciate the role and applications of polymer substances 	<ul style="list-style-type: none"> • 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
22	ELECTIVE III : CHEMOINFORMA TICS	CH921C	<ul style="list-style-type: none"> • To study the fundamentals principles of the various computational methods • To interpret the various methods of representing molecules in a chemical database • To learn to analyse the data 	<ul style="list-style-type: none"> • Describe the various methods of representing molecules in a chemical database and apply the various tools. • Analyze the physicochemical data available in various databases • Apply the data mining tools on datasets and interpret the results. 	National developmental needs

			<p>available in various databases</p> <ul style="list-style-type: none"> To learn to apply the datamining tools on datasets and interpret the results 	<ul style="list-style-type: none"> Explain the fundamentals and apply the various computational methods in chemical calculations. Evaluate the chemical calculations using computer programs, construct the new molecule using molecular modelling tools Design the structure of the small molecules and integrate the docking process using the software 	
23	ORGANIC CHEMISTRY – IV	CH1017	<ul style="list-style-type: none"> To know modern synthetic methods and synthetic strategies. This help in planning the synthesis of any types of organic compounds. To learn the synthesis and bio-synthesis of heterocyclic products. 	<ul style="list-style-type: none"> Define the modern synthetic terminologies/methods and build the synthetic strategies incorporated in retrosynthesis of various types of organic molecules Identify suitable protecting reagents for the protection of multifunctional organic molecules and predicting suitable deprotecting reagents after the completion of desired reaction. Sketch various heterocyclic compounds structure with numbering and their interaction with various chemical reagents in detail. Illustrate the importance of environmentally benign solvents and their role in synthetic organic reactions. Validate the structure of various natural organic molecules and confirming their structure through total synthesis Build the synthetic route theoretically 	Regional developmental needs

				for a given target molecule in retrosynthetic way with theoretical justification.	
24	INORGANIC CHEMISTRY – IV	CH1018	<ul style="list-style-type: none"> To illustrate the structure and bonding nature of Organometallic compounds and their reactions. To study the various industrial importance and applications of organometallic compounds. To study the fundamentals of nuclear chemistry and learn about the working principle of nuclear reactor. To learn the MO theory and spectral behaviour in coordination compounds. To learn the structure and function of bio – inorganic compounds. To study the application of metals in medical field 	<ul style="list-style-type: none"> Explain the bonding in organometallic compounds and illustrate the different types of reactions of complexes analyze the catalytic properties of organometallic compounds and to integrate the application of these compounds in catalysis. Discuss the aspects of nuclear chemistry and applications of nuclear fission and fusion reactions Understand and apply the MO theory and construct the Orgel and Sugano - Tanabe diagrams for coordination complexes Analyse the electronic spectra of complexes and can able to evaluate the Δ_0 and β Review the importance of metallo biochemistry and conclude the role of metals in medicine 	Regional developmental needs
25	PHYSICAL CHEMISTRY – III	CH1019	<ul style="list-style-type: none"> To study the importance and theory of ionic conductance. To learn the concepts of electrode - electrolytic interface and structure of the double layer. To learn the mechanism of electrode reactions and 	<ul style="list-style-type: none"> Comprehend the concept of activity coefficient and ionic strength of electrolytes and to evaluate and relate the mean ionic activity coefficient of electrolytes. Describe the structure of the electrified interface, and define and describe mathematically the capacitance of 	National developmental needs

			<p>electron transfer process.</p> <ul style="list-style-type: none"> To illustrate the importance and industrial applications of different types of fuel cells. To understand the concepts of various methods of energy calculation in many electron systems. To apply the VB, MO and HMO theory to simple many electrons system. 	<p>various model of double layer</p> <ul style="list-style-type: none"> Calculate and analyze the electron transport and kinetic overpotential for electrodes at which a one-step and multi-step electron reaction takes place. Know about the behavior of ions in solution phase under different conditions and its application towards different energy storage devices Describe many-electron atoms with the various approximation methods and evaluate the energy and construct wave function of many electron atoms with suitable methods Describe the chemical bonding quantum mechanically with VB, MO and HMO theory and able to calculate the pi electron energy to simple systems. 	
26	ORGANIC CHEMISTRY PRACTICAL – II	PCH1013	<ul style="list-style-type: none"> To learn practical skills about the estimation of some organic compounds using chemical procedures 	<ul style="list-style-type: none"> Analyze the unknown concentration of the given substance Synthesis and prepare simple organic compounds using a two stage process Relate and articulate the fundamental principles of volumetric estimations Examine and evaluate data collected to determine the identity, purity, and yield of products Develop methods for the estimation of organic substances volumetrically Investigate and interpret simple organic compounds using IR, UV, Mass and 	Regional developmental needs

				NMR spectroscopic data	
27	INORGANIC CHEMISTRY PRACTICAL – II	PCH1014	<ul style="list-style-type: none"> To learn the methods and techniques to estimate inorganic metals. 	<ul style="list-style-type: none"> Learn about the methods and techniques to estimate inorganic metals Analyse the complex materials, alloys or ores and ions Detect the amount of mixtures of iron - magnesium, iron – nickel, copper - nickel and copper – zinc by Gravimetric and Volumetric Understand the principles of photo colorimetric method and be able to apply it for metal estimations Solve the spectra and interpreting it 	Regional developmental needs
28	PHYSICAL CHEMISTRY PRACTICAL- II	PCH1015	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	local, regional ,national and global developmental needs

				conductometrically and design working electrodes	
29	SELF-STUDY PAPER (SSP) CHEMICAL SCIENCES FOR CSIR-UGC – NET/JRF/ GATE	CH1017SP1	<ul style="list-style-type: none"> • To learn about the concept of all bonding and spectral characteristics of compounds • To analyze the various theories of chemical reactions and apply to solve the related problems • To understand the concept of stereochemical reactions and apply the rules to solve the problems 	<ul style="list-style-type: none"> • Link the periodicity of elements with their chemical reactions, structure, bonding, spectral and magnetic properties and resulting applications • Examine various theories with practical heating systems and thermodynamics of various modules and importance of adsorption in catalysis • Sketch and build various stereo specific structure of various molecules, structure specific reactions with various reagents and their stereochemical outcomes 	National developmental needs

Name of the Programme: B.Sc Computer Science

PROGRAMME OUTCOMES

- PO1: Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment
- PO2: Pursue higher learning programmes and become entrepreneurs
- PO3: Recognize moral and ethical values and be socially responsible citizens in the society
- PO4: Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
- PO5: Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings
- PO6: Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
- PO7: Demonstrate communication skills both oral and written in personal and academic pursuits

PROGRAMME SPECIFIC OUTCOMES

After completing this program the student will be able to

- PSO 1: Acquire knowledge of computing, mathematics, and basic sciences that may be relevant and appropriate to the domain
- PSO 2: Analyse a problem, identify and define the computing requirements, design, implement, and evaluate computer-based system, process, component, or program
- PSO 3: Apply Software Development Life Cycle principles to build Software Products and to become a IT professional.
- PSO 4: Become an Entrepreneur and Communicate effectively to accomplish a common goal
- PSO 5: Analyse the local and global impact of computing on individuals, organizations, and society
- PSO 6: Pursue higher studies in the Computer Science domain and to engage in continuous professional development.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	PROBLEM SOLVING TECHNIQUES	CS120	<ul style="list-style-type: none">• To develop problem solving skills with top down design principles.	<ul style="list-style-type: none">• Upon Completing the Course, Students will be able to:• Develop programming	Global developmental needs

			<ul style="list-style-type: none"> • To become competent in algorithm design and program implementation. • To develop skills to apply appropriate standard methods in problem solving 	<p>techniques required to solve a given problem.</p> <ul style="list-style-type: none"> • 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 	
2	WEB DEVELOPMENT USING HTML	CS121	<ul style="list-style-type: none"> • To provide a comprehensive overview of the two largest Web technologies, Hyper Text Markup Language (HTML), and Cascading Style. • To learn through hands-on, 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 	<ul style="list-style-type: none"> • 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 following current professional and/or industry standards. • Use critical thinking skills to design and create websites 	Global developmental needs
3	DIGITAL COMPUTER FUNDAMENTALS	CS221	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	Global developmental needs

			<ul style="list-style-type: none"> • 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 . 	<p>using k-map method and Boolean Laws and Theorems.</p> <ul style="list-style-type: none"> • 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. 	
4	PROGRAMMING USING C	CS222	<ul style="list-style-type: none"> • 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 choose the right one for the task in hand. • To enter the program on a computer, edit, compile, debug, correct, recompile and run it. 	<ul style="list-style-type: none"> • 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 strings. • Ability to work with arrays, structures, pointers and files. 	Global developmental needs
5	COMPUTER ORGANIZATION AND ARCHITECTURE	CS322	<ul style="list-style-type: none"> • To understand the basics of Computer Organization. • To know the relationship between computer instruction and the Machine code execution. • To know about the various 	<ul style="list-style-type: none"> • Study basic computer organization, design and micro-operations. • Prepare machine code from the instructions • Understand CPU organization and different types of 	Global developmental needs

			<p>types of CPU Organization and Addressing Modes.</p> <ul style="list-style-type: none"> • To recognize the need of interface between CPU and Input / Output devices. • To think critically, independently, and quantitatively about Computer Memory. 	<p>addressing modes.</p> <ul style="list-style-type: none"> • Understand how the Input/ Output devices communicate with the computer • Learn various methods and techniques of memory organization. 	
6	DATA STRUCTURES AND ALGORITHMS USING C	CS323	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	Global developmental needs

			<p>issues in large, complex software projects.</p> <ul style="list-style-type: none"> • Understand purpose and importance of the project management from the perspective of planning, tracking and completion of project. 	<p>and inter-group negotiation.</p> <ul style="list-style-type: none"> • 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. 	
8	RELATIONAL DATABASE MANAGEMENT SYSTEMS	CS423	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	Global developmental needs

			<p>write Queries usingSQL.</p> <ul style="list-style-type: none"> To explore the organization and to acquire skills in developing programs usingPL/SQL. 	<ul style="list-style-type: none"> 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 	
9	PROGRAMMING USING JAVA	CS540	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 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. 	Global developmental needs

				<ul style="list-style-type: none"> Develop software in the Java programming language, (using applet, AWT controls, and JDBC) 	
10	WEB DEVELOPMENT USING XML	CS541	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> To learn about PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages To Understand File handling concepts Understanding PHP code to connect, access, and update a MySQL database Understanding PHP using XML 	<ul style="list-style-type: none"> Upon completion of this course, students should be able to: Understand process of 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. 	Global developmental needs

				<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. Able to compare & constant various scheduling algorithm 	Global developmental needs
13	COMPUTER GRAPHICS	CS544 A	<ul style="list-style-type: none"> Understand the Role and importance of Algorithms like Line drawing Algorithm, Circle 	<ul style="list-style-type: none"> To provide comprehensive introduction about computer graphics system, design and two 	Global developmental needs

			<p>drawing Algorithm, Character generating Algorithm.</p> <ul style="list-style-type: none"> • 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. 	<p>dimensional transformations.</p> <ul style="list-style-type: none"> • 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 	
14	DATA MINING AND WAREHOUSING	CS544 B	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To introduce the decision making system, models and support • To appraise the general nature 		Global developmental needs

			<p>and range of decision support and group support systems</p> <ul style="list-style-type: none"> To impart about knowledge based system and advanced intelligent systems 		
16	SOFTWARE TESTING AND QUALITY ASSURANCE	CS544 D	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> To develop a mobile application. To understand the concept of SQLite 	<p>Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> 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 database 	Global developmental needs

				under the Android operating system.	
18	PROGRAMMING USING PYTHON	CS634	<ul style="list-style-type: none"> • 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. 	<p>After this course, the student will be able to</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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. 	<p>Upon completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To Understand the basic architecture of the Microprocessor • To learn the instruction sets of the processor • To write applications using assembly level language program 	<p>At the end of the course, students should be able to:</p> <ul style="list-style-type: none"> • Identify the types of instructions and the organization of registers and memory • Describe the translation model of assembly language to 	Global developmental needs

			<ul style="list-style-type: none"> • To study the input/output interfaces of the processor • To understand the importance of interrupts in programming 	<p>machine language.</p> <ul style="list-style-type: none"> • Understand the micro-program by mapping the instructions. • Recognize the types of computer organizations. • Accept the better ways of Parallel and Vector processing. 	
21	COMPUTER NETWORKS	CS637 A	<ul style="list-style-type: none"> • To learn the basic concepts of Computer Networks 	<ul style="list-style-type: none"> • 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

Name of the Programme: M Sc. Computer Science

Programme Outcomes at Postgraduate Level

Postgraduates will be able to:

- **PO1:** Demonstrate intense knowledge in their discipline
- **PO2:** Exhibit specialised skills to plan, analyse and draw conclusions related to their respective field of study in theory and in practice
- **PO3:** Develop expertise in their field of study through projects and research activities
- **PO4:** Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialisation
- **PO5:** Develop social and ethical responsibility in the transfer and management of knowledge

Programme Specific Outcomes

On successful completion of this programme, students should be able to:

- **PSO 1:** Acquire fundamental knowledge in problem-solving and in-depth knowledge in computer science to implement solutions using appropriate algorithms of varying complexity.
- **PSO 2:** Apply the knowledge gained during the program to identify, formulate and solve complex real-life problems faced in industries and R&D with an orientation to lifelong learning.
- **PSO 3:** Ability to develop technical skills needed to be an influential academician or an entrepreneur, or in a software concern.
- **PSO 4:** Apply the knowledge of ethical and management principles required to work in a team and lead a team.
- **PSO 5:** Develop software to cater to the needs of the organization, nation and region

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	PRINCIPLES OF COMPILER DESIGN	MCS170T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 generation phase. 	global developmental needs
2	ADVANCED JAVA PROGRAMMING	MCS171T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	global developmental needs

			<ul style="list-style-type: none"> To understand the web programming concepts in the perspective of Client and Server. 	<ul style="list-style-type: none"> Examine collections and networking with java.util and java.net packages Evaluate various server side programming in java. Produce web based java Applications using Servlet and JSP. 	
3	WINDOWS APPLICATIONS	MCS172T	<ul style="list-style-type: none"> 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 application with Database 	<ul style="list-style-type: none"> 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 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#. 	global developmental needs
4	OPEN SOURCE TECHNOLOGIES	MCS173T	<ul style="list-style-type: none"> To learn designing webpage using HTML & CSS To understand the concept of Database To learn Server-side scripting 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to Clarify the concept of open source technologies and tolls. 	global developmental needs

			<p>language</p> <ul style="list-style-type: none"> To introduce applications using PHP with MYSQL 	<ul style="list-style-type: none"> 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. 	
5	ELECTIVE – I: A. WEB SERVICES	MCS174A	<ul style="list-style-type: none"> To examine fundamental XML technology To understand the use of JSON To gain an understanding about 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 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to Understand the use of web 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 	global developmental needs

				<p>realistic business scenario.</p> <ul style="list-style-type: none"> • Design collaborating web services according to a specification. 	
6	ELECTIVE-I : B. DATA MINING AND WAREHOUSING	MCS174B	<ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • 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. • To understand the concept of web mining. 	global developmental needs
7	ELECTIVE – I: C. BUSINESS INTELLIGENCE	MCS174C	<ul style="list-style-type: none"> • To introduce the idea of decision making in complex industrial and service environments • To understand the science behind better predictions and decisions • To generate an ability to design, 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Recognize the foundations, definitions, and capabilities of DSS, data analytics and BI. • Summarize the impact of 	global developmental needs

			<p>analyze and perform experiments on real life problems using various Decision making methodologies.</p> <ul style="list-style-type: none"> • To Critically evaluate use of BI for supporting decision making in an organization. • To Understand and use the technologies and tools that make up BI 	<p>business reporting, information visualization, and dashboards.</p> <ul style="list-style-type: none"> • Explore data mining, neural networks, support vector machines, text analytics, text mining, sentiment analysis, web mining, web analytics, social analytics, and social network analysis. • Infer the major ethical and legal issues of analytics. • Review how analytics are powering consumer applications and creating a new opportunity for entrepreneurship for analytics. • Plan the implementation of a BI system. 	
8	PRACTICAL - I: ADVANCED JAVA PROGRAMMING	MCS175P	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

			perspective of Client and Server.	<p>of the database using JDBC</p> <ul style="list-style-type: none"> • 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 	
9	PRACTICAL - II: WINDOWS APPLICATIONS	MCS176P	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
10	PRACTICAL - III: OPEN SOURCE TECHNOLOGIES	MCS177P	<ul style="list-style-type: none"> • learn designing webpage using HTML & CSS • understand the concept of Database • learn Server-side scripting language 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Find the usages of open sources technologies. • Explain the process of website 	global developmental needs

			<ul style="list-style-type: none"> introduce applications using PHP with MYSQL 	<p>creation to any kind of real time problem.</p> <ul style="list-style-type: none"> 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, MySQL and JSON. 	
11	EMPLOYABILITY SKILLS	MCS178S	<ul style="list-style-type: none"> To know the basic requirements of the JOB. To know the problem in the process of interview. Preparation towards taking part in the interview To know about the communication process To improve oneself in facing interview 	<ul style="list-style-type: none"> 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 the interview. 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
12	DISTRIBUTED OPERATING SYSTEMS	MCS270T	<ul style="list-style-type: none"> To understand the fundamental concepts of operating systems To understand the need for 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to 	global developmental needs

			<p>distributed systems.</p> <ul style="list-style-type: none"> • To get acquainted with the design principles of distributed operating systems. • To explore the concept of synchronization • To handle the process in distributed environment 	<ul style="list-style-type: none"> • 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. • Summarize centralized system and Distributed systems. • Describe the various communication methods like synchronous communication and asynchronous communication. 	
13	ENTERPRISE JAVA PROGRAMMING	MCS271T	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

			using Spring and Spring MVC.	<ul style="list-style-type: none"> • Prepare Enterprise web application using EJB • Integrate the Object-Relation Mapping technique with java using Hibernate 	
14	WEB APPLICATIONS	MCS272T	<ul style="list-style-type: none"> • To understand the difference between desktop and dynamic web applications. • To understand the ASP.NET web application execution model. • 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. 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Discover the differences between static and dynamic web 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 	global developmental needs
15	PROGRAMMING IN PYTHON	MCS273T	<ul style="list-style-type: none"> • To know the basics of algorithmic problem solving • To read and write simple Python programs. • To develop Python programs with conditionals and loops. 	<ul style="list-style-type: none"> • 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 	global developmental needs

			<ul style="list-style-type: none"> • To define Python functions and call them. • To use Python data structures – lists, tuples, dictionaries. • To do input/output with files in Python. 	<p>Python control flow statements</p> <ul style="list-style-type: none"> • 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 • 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 	
16	ELECTIVE-II: A. OBJECT ORIENTED ANALYSIS AND DESIGN	MCS274A	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

				<p>implementation.</p> <ul style="list-style-type: none"> • Create UML diagrams for software development process. 	
17	ELECTIVE II: B. SOFTWARE TESTING AND QUALITY ASSURANCE	MCS274B	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to • Understand the key concepts and principles of software testing • 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 	global developmental needs
18	ELECTIVE-II: C. WIRELESS SENSOR NETWORKS	MCS274C	<ul style="list-style-type: none"> • To understand the concepts of wireless sensor networks • To understand the protocols for 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to 	global developmental needs

			<p>WSN</p> <ul style="list-style-type: none"> • To get exposure on WSN environment with TinyOS and like • To understand the layered approach in sensor networks • To design WSN and analyze performance. 	<ul style="list-style-type: none"> • Identify different issues in wireless ad hoc and sensor networks. • Analyze protocols developed for ad hoc and sensor networks. • Address the security threats in 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 	
19	PRACTICAL - IV: ENTERPRISE JAVA PROGRAMMING	MCS275P	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	global developmental needs

				<ul style="list-style-type: none"> Evaluate the AOP(Aspect Oriented Programming) using Spring and Spring MVC 	
20	PRACTICAL - V: WEB APPLICATIONS	MCS276P	<ul style="list-style-type: none"> To demonstration of Web Configuration file To apply the web control classes To develop the component programming To create a secured web application with validation To apply the component programming 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to 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 	global developmental needs
21	PRACTICAL - VI: PROGRAMMING IN PYTHON	MCS277P	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	global developmental needs

			<ul style="list-style-type: none"> To use Python data structures – lists, tuples, dictionaries. To do input/output with files in Python. 	<p>Python programs.</p> <ul style="list-style-type: none"> Represent compound data using Python lists, tuples, and dictionaries. Read and write data from/to files in Python. Develop user interface applications 	
22	TECHNICAL APTITUDE	MCS278S	<ul style="list-style-type: none"> To impart knowledge on various basic principles involved in Computer science. To prepare the students for facing the technical interview questions To prepare the students for the placement 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to Identify the important concepts and techniques in core subjects. Discuss the principles involved computer science subjects. Infer confident about the technical questions Analyze their skills by attending the quiz. Grade the students to build their career by studying the core concepts in Computer Subjects Evaluate the students' technical knowledge based on the performance of their quiz. 	local developmental needs
23	SOFTWARE PROJECT I & II	MCS476J	<ul style="list-style-type: none"> To examine fundamental XML technology To understand the use of JSON To gain an understanding about the role of web services in 	<ul style="list-style-type: none"> On completion of the course, students should be able to CO1: Identifying the ability to work in one or more significant application domains 	local developmental needs

			<p>commercial applications</p> <ul style="list-style-type: none"> • To learn the emerging standard protocols like SOAP, WSDL and UDDI. • To introduce the role of web services in CMS 	<ul style="list-style-type: none"> • CO2: Understanding of software requirements and the SRS documents • CO3: Practice the role of professional ethics in successful software development • CO4: Analyze and apply information technology principles and practices to real-world solutions • CO5: Evaluate, the ability to develop, maintain an evaluate large scale software systems • CO6: Demonstrate an ability to use the techniques and tools 	
24	HUMAN RIGHTS	VE1004	<ul style="list-style-type: none"> • To strengthen respect for human rights and fundamental freedoms, • To value human dignity and develop individual self-respect and respect for others • To develop attitudes and behaviors that will lead to respect for the rights of others. • To promote respect, understanding and appreciation of diversity. • To empower people towards more active citizenship. • To ensure genuine mime gender equality and equal opportunities 	<ul style="list-style-type: none"> • On completion of the course, students should be able to • CO1: Understand the historical growth of the idea of human rights. • CO2: Summarize an understanding of what human rights. • CO3: Identify and analyze who is responsible for upholding human rights • CO4: Distinguish the meaning and significance of the Universal Declaration of Human Rights • CO5: Evaluate the concepts 	national developmental needs

			for women and men.	and ideas of Human Rights. <ul style="list-style-type: none"> • CO6: Adapt and apply the concepts of human rights to their own lives 	
25	INTERNET OF THINGS	MCS370T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
26	ARTIFICIAL INTELLIGENCE	MCS371T	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

				<ul style="list-style-type: none"> • 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. 	
27	DESIGN AND ANALYSIS OF ALGORITHMS	MCS372T	<ul style="list-style-type: none"> • 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 Programming and its algorithms 	<ul style="list-style-type: none"> • 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 Backtracking algorithms. 	global developmental needs

			<ul style="list-style-type: none"> Adapt the Backtracking method to solve N-Queen, Graph coloring sum of subsets problems. Interpret various Branch and Bound techniques for designing the algorithms . 	<ul style="list-style-type: none"> To understand Branch and Bound techniques for designing and analyzing algorithms. 	
28	MOBILE APPLICATIONS	MCS373T	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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
29	ELECTIVE - III: A. SEMANTIC WEB AND APPLICATIONS	MCS374A	<ul style="list-style-type: none"> To learn the fundamentals of semantic web and to conceptualize and depict ontology for semantic web. 	<ul style="list-style-type: none"> On successful completion of this Course, students will be able to. Identify the ontology for a 	global developmental

			<ul style="list-style-type: none"> • 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. 	<p>given domain.</p> <ul style="list-style-type: none"> • 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
30	ELECTIVE – III: B. ETHICAL HACKING & CYBER FORENSICS	MCS374B	<ul style="list-style-type: none"> • To understand the hacking techniques of computer forensics. • To learn about data recovery methods. • To know about threats and vulnerabilities • To identify the threats in computer forensics. • To get knowledge on data recovery 	<ul style="list-style-type: none"> • 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. • Construct on the strengths and vulnerabilities of the tested network. 	global developmental needs

31	ELECTIVE – III: C. CLOUD COMPUTING	MCS374C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
32	PRACTICAL - VII: DESIGN AND ANALYSIS OF ALGORITHMS	MCS375P	<ul style="list-style-type: none"> • 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 Backtracking 	<ul style="list-style-type: none"> • 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 	global developmental needs

			<p>algorithms.</p> <ul style="list-style-type: none"> To understand Branch and Bound techniques for designing and analyzing algorithms. 	<p>solved by Dynamic Programming and its algorithms</p> <ul style="list-style-type: none"> Adapt the Backtracking method to solve N-Queen, Graph coloring sum of subsets problems. Interpret various Branch and Bound techniques for designing the algorithms . 	
33	PRACTICAL - VIII: MOBILE APPLICATIONS	MCS376P	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

34	BIG DATA ANALYTICS	MCS470T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 Cassandra • Design & assess the Big data queries using Hive and Pig 	global developmental needs
35	DATA SCIENCE WITH PYTHON	MCS471T	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

				Numpy and Pandas.	
36	MACHINE LEARNING	MCS472T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. • Evaluate and interpret the results of the algorithms. • Design and implement machine learning solutions to classification, regression, and 	global developmental needs

				clustering problems;	
37	ELECTIVE – IV: A. CRYPTOGRAPHY AND NETWORK SECURITY	MCS473A	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
38	ELECTIVE – IV: B. SOCIAL NETWORK ANALYSIS	MCS473B	<ul style="list-style-type: none"> • To gain knowledge about the current web development and emergence of social web. • To study about the modeling, aggregating and knowledge representation of semantic web. • To appreciate the use of machine learning approaches for web content mining. 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to. • Identify the current web development in the era of social web. • Understand Model, aggregate and represent knowledge for semantic web. 	global developmental needs

			<ul style="list-style-type: none"> • To learn about the extraction and mining tools for social networks. • To gain knowledge on web personalization and web visualization of social networks. 	<ul style="list-style-type: none"> • Apply machine learning approaches for web content mining. • Classify design extraction and mining tools for social networks. • Evaluate personalized web sites and visualization for social networks. • Generalize the knowledge of current web development in the era of social web. 	
39	ELECTIVE – IV: C. SOFT COMPUTING	MCS473C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
40	PRACTICAL – IX: DATASCIENCE WITH PYTHON	MCS474P	<ul style="list-style-type: none"> • To know the fundamental algorithmic ideas to process data. 	<ul style="list-style-type: none"> • On successful completion of this Course, students will be able to 	global developmental needs

			<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	
41	PRACTICAL – X: MACHINE LEARNING	MCS475P	<ul style="list-style-type: none"> • To recognize and implement various ways of selecting suitable model parameters for different machine learning 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

				<p>characteristics such as high dimensionality, dynamically growing data and in particular scalability issues.</p> <ul style="list-style-type: none"> • 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; 	
42	SOFTWARE PROJECT I & II	MCS476J	<ul style="list-style-type: none"> • To examine fundamental XML technology • To understand the use of JSON • To gain an understanding about 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 	<ul style="list-style-type: none"> • On completion of the course, students should be able to • CO1: Identifying the ability to work in one or more significant application domains • CO2: Understanding of software requirements and the SRS documents • CO3: Practice the role of professional ethics in successful software development • CO4: Analyze and apply information technology principles and practices to real-world solutions 	Local developmental needs

				<ul style="list-style-type: none"> • CO5: Evaluate, the ability to develop, maintain an evaluate large scale software systems • CO6: Demonstrate an ability to use the techniques and tools 	
43	HUMAN RIGHTS	VE1004	<ul style="list-style-type: none"> • To strengthen respect for human rights and fundamental freedoms, • To value human dignity and develop individual self-respect and respect for others • To develop attitudes and behaviors that will lead to respect for the rights of others. • To promote respect, understanding and appreciation of diversity. • To empower people towards more active citizenship. • To ensure genuine mime gender equality and equal opportunities for women and men. 	<ul style="list-style-type: none"> • On completion of the course, students should be able to • CO1: Understand the historical growth of the idea of human rights. • CO2: Summarize an understanding of what human rights. • CO3: Identify and analyze who is responsible for upholding human rights • CO4: Distinguish the meaning and significance of the Universal Declaration of Human Rights • CO5: Evaluate the concepts and ideas of Human Rights. • CO6: Adapt and apply the concepts of human rights to their own lives 	national developmental needs
44	RESEARCH INVESTIGATION	MCS477S	<ul style="list-style-type: none"> • To enable the students to choose an area of specialization. • To help the students to focus on current research in computer science. • To understand the research areas by collecting and reading 	<ul style="list-style-type: none"> • On completion of the course, students should be able to • CO1: Identify the research ethics. • CO2: Understand the research problem and research process. • CO3: Develop skills in 	national developmental needs

			research papers, analysing qualitative and quantitative aspects by a survey or implementation.	qualitative and quantitative data analysis and presentation <ul style="list-style-type: none">• CO4: Evaluate a well-structured research paper and scientific presentations• CO5: Assess the adequate knowledge of research• CO6: Demonstrate the ability to choose methods appropriate to research aims and objectives.	
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Name of the Programme: MSW

Programme Outcomes Postgraduate level

CO's files filled with Course relevance for the years 2017-18 and 2021-22

Undergraduates will be able to	
PO1	Social Work Practices Students learn social work values, principles, and techniques in the field of social work. They are able to associate with various communities, groups and diverse populations. Students understand the need, objectives, ethics and history of Social Work Practices.
PO2	Methods of Social Work Students are taught the primary and secondary methods of Social Work. Foundation content in this area includes the knowledge base (theory, research & practice) for the application and the professional practice of Social Work. Social Work students gain exposure in the field of Social Case Work, Social Group Work and Community Organization. Students gain firsthand experience in the application of Social Action, Social Welfare Administration and Social Work Research.
PO3	Field Work Exposure Students at an average spend 28 days every semester. This connects them with the organizations and Industries they would like to work in the future. Summer Block Field Training of 26 days is also provided to enrich students on various aspects in the field of Social Work. This exposure bridges the gap between class room theory and field work practices.
PO4	Human Resource Management This programme prepares students to build careers in the HR departments of industries, hospitals, NGOs and other organizations. They are exposed to various aspects on the administration of labour laws, disciplinary procedures, organizational behavior and human resource development. Students are taught to hone their skills on various aspects pertaining in the field of HRM.
PO5	Youth Development Students pertaining to the specialization of youth development acquire knowledge on policy formulations, importance of youth-adult relationships, and the benefits and challenges to successful practices in the field.

P06	<p>Community Development Social Work students in the field of community development deal with intervention in the communities to solve the community problems. Students address Many of the community problems like social injustice, poverty, inadequate housing, poor nutrition, lack of health, lack of medical services, unemployment, pollution, exploitation, bonded labour system</p>
P07	<p>Social Research A strong grounding on the methodologies of Social Work Research enable students to explore, study, ascertain and address various issues via scientific studies across various specializations in the field of Social Work. Student's carryout vivid research using different research designs, sampling techniques and correlate their research findings on addressing different issues.</p>
P08	<p>Theater Skills Students learn various traditional folk lore, drama and dances (Parai Attam, Kummi Attam, Tappu Attam and Kovil Attam) etc. The various aspects addressed here draw to the grass roots of tradition in sensitizing people via skits, drama and folk lore on various prevalent issues.</p>
P09	<p>Communication Skill All employers look for job candidates with strong communication skills. Students are taught the primary aspects of communication which include:-Listening, Speaking, Reading and Writing Skills. Group Discussions, Extempore and the aspects of Verbal and Non Verbal Communication techniques are addressed.</p>
P10	<p>Employability Skills Students in the field of Social Work gain skills and capabilities that make them more likely to gain employment and be successful in their chosen occupations as they navigate their way through a dynamic labour market</p>
P11	<p>SPSS & NVivo Software in the field of quantitative and qualitative data are gaining more importance nowadays. Students in the discipline of social work are taught the practical use of the software via free versions. Students compute their research data via the SPSS & NVivo</p>
P12	<p>Ethics Students are taught to recognize different value systems including their own, understanding moral values, decisions and social responsibility. Students learn the need for informed consent, ethical procedures and factors governing Social Work Practices</p>
P13	<p>Environment and Sustainability Social Work Students understand the issues with regard to the environment and sustainability. Grow Green, Go Green is one such initiative undertaken by the student in creaking an environmental friendly enviornment.</p>

Programme Specific Outcomes at Undergraduate Level

PSO1	Introduction to the various aspects of Social Work Profession.
PSO2	Understand the methods of Social Work Practice with Individuals.
PSO3	Carry out Social Work Practices with various Groups.
PSO4	Recognize the aspects of Sociology for Social Work Practice
PSO5	Comprehend various Psychological procedures for Social Work Practice
PSO6	Reach the community via Social Work Practices with various Communities
PSO7	Understand the factors, principles, objectives and labour laws governing Human Resource Management
PSO8	Identify various theories, practices and methods of Medical & Psychiatric Social Work.
PSO9	Recognize the importance of Social Welfare Administration
PSO10	Understand the various Labour Legislation and Labour Welfare nomenclatures governing Human Resource Management in a more detailed and specific manner.
PSO11	Students also take up specific training on Transactional Analysis and its implications.
PSO12	Social Work Research & Statistics are taught to students. They incorporate various need based studies. Research Projects are also carried out by students and they collect data using different designs in Social Work Research.
PSO13	Students are taught the importance and practice of Rural & Urban Community Development, Rural and Urban Governance
PSO14	Students learn the important aspects of Industrial Relations, Human Resource Management in various Service Sectors , industries and manufacturing units.
PSO15	Youth Development, Strategies for youth Development and its priority are taught via the implication of various methods, current trends and governing policies.
PSO16	Students are given practical exposure on the application of various software packages which include SPSS & NVivo

Name of Department: MSW

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTRODUCTION TO SOCIAL WORK PROFESSION	MSW111T	<ul style="list-style-type: none"> - 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 	<p><i>The students will...</i></p> <ul style="list-style-type: none"> - 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 developmental needs
2	SOCIAL WORK PRACTICE WITH INDIVIDUALS	MSW112T	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 developmental needs
3	SOCIAL WORK PRACTICE WITH GROUPS	MSW113T	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 developmental needs

			working with groups		
4	SOCIOLOGY FOR SOCIAL WORK PRACTICE	: MSW115T	<ul style="list-style-type: none"> - Gain basic knowledge on Sociology - Understand the behavior of human beings - To understand the role of social workers in dealing with social problems. 	<ul style="list-style-type: none"> - Gain basic knowledge on Sociology - Understand the behavior of human beings - To understand the role of social workers in dealing with social problems. 	Global developmental needs
5	THEATRE SKILLS - (SKILL PAPER -SK 1)	MSW116T	<ul style="list-style-type: none"> • To gain better understanding theatre fundamentals • Have Personality development through theatre • Have the ability to Create Alternative thoughts and Alternative Aesthetics 	<ul style="list-style-type: none"> • Gain better understanding theatre fundamentals • Have Personality development through theatre • Have the ability to Create Alternative thoughts and Alternative Aesthetics 	National Developmental Needs
6	CONCURRENT FIELD WORK – I (Main Core)	MSW117F	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 developmental needs

7	SOCIAL WORK PRACTICE WITH COMMUNITIES (Main Core-4)	<u>MSW211T</u>	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
8	HUMAN RESOURCE MANAGEMENT (Main Core-5)	<u>MSW212T</u>	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs

9	MEDICAL AND PSYCHIATRIC SOCIAL WORK (Main Core-6)	MSW213T	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
10	CONCURRENT FIELD WORK – II	MSW217F	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs

11	BLOCK FIELD WORK (Required)	MSW218F	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
12	TRANSACTIONAL ANALYSIS (Certificate Course-1)		<ul style="list-style-type: none"> - To Gain knowledge about the concepts related to transaction analysis - Understand the self and others - Acquire the skills of communication and problem solving 	<ul style="list-style-type: none"> - Gain knowledge about the concepts related to transaction analysis - Understand the self and others - Acquire the skills of communication and problem solving 	Global Developmental Needs
13	RURAL AND URBAN GOVERNANCE	MSW313A	<ul style="list-style-type: none"> - To gain knowledge about rural and urban governance - Understand the functions and activities of local self-governments - Acquire the skills of working with and through local self-governments 	<ul style="list-style-type: none"> - Gain knowledge about rural and urban governance - Understand the functions and activities of local self-governments - Acquire the skills of working with and through local self-governments 	Global Developmental Needs

14	HUMAN RESOURCE MANAGEMENT IN SERVICE SECTOR	MSW313B	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
15	STRATEGIES FOR YOUTH DEVELOPMENT	MSW313C	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> • 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 Developmental Needs
16	DATA PROCESSING & ANALYSIS SKILL (SPSS & NVivo) Skill Paper–SK 3	MSW316S	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs

17	RESEARCH PROJECT –I	MSW318J	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - 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 Developmental Needs
18	QUALITATIVE RESEARCH IN SOCIAL WORK (Main Elective-1)	MSW314A	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
19	HOSPITAL ADMINISTRATION (Main Elective-1)	MSW314B	<ul style="list-style-type: none"> - To gain basic knowledge on Hospital Administration - Understand the functions of Hospital - Acquire the skill for administering Hospitals. 	<ul style="list-style-type: none"> - Gain basic knowledge on Hospital Administration - Understand the functions of Hospital - Acquire the skill for administering Hospitals. 	National Developmental Needs

20	THERAPEUTIC INTERVENTIONS IN SOCIAL WORK (Main Elective-1)	MSW314C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 developmental needs
21	CORPORATE SOCIAL RESPONSIBILITY (Main Elective-2)	MSW315A	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 developmental needs
22	HOTEL FRONT OFFICE MANAGEMENT	MSW315B	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - 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 Developmental Needs

23	DISASTER MANAGEMENT	MSW315C	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 Developmental Needs
24	CONCURRENT FIELD WORK – III	MSW317F	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs

25	PSYCHOMETRIC & TESTING TOOLS		<ul style="list-style-type: none"> - To gain knowledge about psychological assessment and purposes - Acquire skills about intelligence, aptitude and interest assessments - 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 	<ul style="list-style-type: none"> - Gain knowledge about psychological assessment and purposes - Acquire skills about intelligence, aptitude and interest assessments - 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 	Global Developmental Needs
26	HUMAN RIGHTS AND SOCIAL LEGISLATION	<u>MSW411T</u>	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
27	DEVELOPMENT STRATEGIES	<u>MSW412A</u>	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs

28	ORGANISATIONAL BEHAVIOUR	MSW412B	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
29	NGO MANAGEMENT	MSW412C	<ul style="list-style-type: none"> - To gain knowledge about establishing and managing a nongovernmental organization - Understand the functions and activities of a nongovernmental organization - Acquire the skill of working with nongovernmental organization 	<ul style="list-style-type: none"> - Gain knowledge about establishing and managing a nongovernmental organization - Understand the functions and activities of a nongovernmental organization - Acquire the skill of working with nongovernmental organization 	National Developmental Needs
30	LIVELIHOOD AND SOCIAL AUDIT	MSW413A	<ul style="list-style-type: none"> • To understand the concept, need, importance and principles of rural livelihood and social audit. • Gain knowledge on rural livelihood and the various methods involved in social auditing • Acquire skills to practice social accounts and audit. 	<ul style="list-style-type: none"> • Understand the concept, need, importance and principles of rural livelihood and social audit. • Gain knowledge on rural livelihood and the various methods involved in social auditing • Acquire skills to practice social accounts and audit. 	National Developmental Needs

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31	HUMAN RESOURCE DEVELOPMENT	MSW413B	<ul style="list-style-type: none"> - To gain knowledge about human resource development - Understand the approaches and activities of human resource development - Acquire the skills of developing human resources in different sectors 	<ul style="list-style-type: none"> - Gain knowledge about human resource development - Understand the approaches and activities of human resource development - Acquire the skills of developing human resources in different sectors 	National Developmental Needs
32	COUNSELING & CAREER GUIDANCE	MSW413C	<ul style="list-style-type: none"> - To gain knowledge about counseling and career guidance - Understand the methods and steps of counseling and guidance - Acquire the skills of extending counseling services to the needy 	<ul style="list-style-type: none"> - Gain knowledge about counseling and career guidance - Understand the methods and steps of counseling and guidance - Acquire the skills of extending counseling services to the needy 	National Developmental Needs

33	EMPLOYABILITY SKILLS (Skill Paper-SK 4)	MSW416S	<ul style="list-style-type: none"> - To gain the knowledge Dimension of Employability Skills and Career Planning Skill - Resume Writing & Interview Skills - Planning, Organizing Skill and Team Work Skill 	<ul style="list-style-type: none"> - Knowledge Dimension of Employability Skills and Career Planning Skill - Resume Writing & Interview Skills - Planning, Organizing Skill and Team Work Skill - 	Regional Developmental Needs
34	RESEARCH PROJECT –II	MSW418J	<ul style="list-style-type: none"> - To gain knowledge in designing and implementing a research methodology. - Gain skills in applying research software to process and analyze the data. - Acquire skills to interpret data and derive results and discussions - Understand the process of preparing a research project. - Acquire the skills of undertaking a research project 	<ul style="list-style-type: none"> - Gain knowledge in designing and implementing a research methodology. - Gain skills in applying research software to process and analyze the data. - Acquire skills to interpret data and derive results and discussions - Understand the process of preparing a research project. - Acquire the skills of undertaking a research project 	Local Developmental Needs

35	PROJECT MONITORING AND EVALUATION (Main Elective-3)	MSW414A	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
36	SKILL MATRIX AND COMPETENCY MAPPING (Main Elective -3)	MSW414B	<ul style="list-style-type: none"> - To gain the knowledge on skill matrix and competency mapping - To gain the ability to apply it in the context of the organizational development 	<ul style="list-style-type: none"> - Gained the knowledge on skill matrix and competency mapping - Gained the ability to apply it in the context of the organizational development 	Global Developmental Needs
37	SOCIAL WORK WITH FAMILIES AND CHILDREN (Main Elective-3)	MSW414C	<ul style="list-style-type: none"> - To gain knowledge on functions, interaction and issues concerning adults and children in Indian families - Gain knowledge and skills in family intervention - Understand the needs of the children and programmes for children 	<ul style="list-style-type: none"> - Gain knowledge on functions, interaction and issues concerning adults and children in Indian families - Gain knowledge and skills in family intervention - Understand the needs of the children and programmes for children 	Local Developmental Needs

38	ENVIRONMENTAL SOCIAL WORK (Main Elective 4)	MSW415A	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 Developmental Needs
39	PERFORMANCE MANAGEMENT (Main Elective-4)	MSW415B	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - 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 Developmental Needs

40	SOCIAL ENTREPRENEURSHIP (Main Elective-4)	MSW415C	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 Developmental Needs
41	CONCURRENT FIELD WORK – IV	MSW417F	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 - 	National Developmental Needs
42	BLOCK FIELD WORK – II	MSW419F	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 - 	National Developmental Needs

Name of the Programme: BBA

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	FUNDAMENTALS OF MANAGEMENT	B108	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	FUNDAMENTALS OF ORGANIZATION	B109	<ul style="list-style-type: none"> • To impart to the students an understanding of business concepts with a view to prepare those to face emerging challenge of managing business. • To Comprehend different forms of organization and ethical issues in business. • To create awareness about trade associations. 	<ul style="list-style-type: none"> • To Adapt the basic Concepts in Commerce, Trade and Industry and How they apply in the real world • To Construct the Ethical and Social Responsibility of Business • To Analyze about Positive and Negative aspects in the forms of Sole trader, Partnership and Joint Hindu Family System • To Compare and assess the functions of company and Cooperative societies • To Evaluate the features of Trade Associations 	National needs

				<ul style="list-style-type: none"> • Categorize and appraise the basic concepts in business organization and social responsibilities of business 	
3	ACCOUNTING FOR MANAGERS	B208	<ul style="list-style-type: none"> • To Provide an in depth understanding of the Accounting Principles • To learn fundamental aspects of accounting • To develop the financial management skills and to become a finance manager in future 	<ul style="list-style-type: none"> • The students should be able to apply all accounting concepts in various real-life situations. • To acquire and evaluate the accounting knowledge from Journal 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 	Global developmental needs
4	BUSINESS CORRESPONDENCE	B209	<ul style="list-style-type: none"> • Understand the critical and important role of Business Letters • Imbibe meaning of Business Communication and the general principles of communication. • Identify different types of organizational communications. • Learn the mechanical structure of letters and drafting of others forms of 	<ul style="list-style-type: none"> • 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 	National needs

			communications.		
5	HUMAN RESOURCE MANAGEMENT	B319	<ul style="list-style-type: none"> • 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 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 	<ul style="list-style-type: none"> • 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 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 	Global developmental needs
6	PRINCIPLES OF MARKETING	B320	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	Global developmental needs

				<p>various distribution channels, channel partners and services offered by middlemen</p> <ul style="list-style-type: none"> Students develop analytical skills to tackle the challenges and latest development in Marketing Management 	
7	<p>COST & MANAGEMENT ACCOUNTING</p>	B321	<ul style="list-style-type: none"> To enable the students to acquire the knowledge on cost and management Accounting Import the knowledge of cost accounting To help the student to apply cost accounting practice. Apply basic ratio of a company. 	<ul style="list-style-type: none"> List the basic knowledge of Cost and Costing Construct the cost sheets and practice in the industries Examine the basic concepts of management accounting and interpret the different financial statement of a company To know what is Ratio? And combine the different methods of Ratio Understand and relate the concept of marginal costing. To decide and formulate the working knowledge of the principles of practices of cost and management accounting 	National needs
8	ECONOMICS FOR MANAGEMENT	B322	<ul style="list-style-type: none"> 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 & 	<ul style="list-style-type: none"> 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 	Global developmental needs

			responsibilities of Managerial Economists. <ul style="list-style-type: none"> • Import the knowledge of forecasting. • Application of cost control & cost reduction. 	decisions in the market <ul style="list-style-type: none"> • 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 	
9	LEGAL ASPECTS OF BUSINESS	B323	<ul style="list-style-type: none"> • To give an exposure to important commercial laws, the knowledge, that is essential for an understanding of the legal implications of the general activities of a modern business organization. • To understand the legal frame work related to contract • To learn the basic business law concepts and apply in the practice in the business 	<ul style="list-style-type: none"> • To take part in the students to understand the essential elements of Indian Contract Act 1872 • To decide the discharge of contract and contingent contract • Interpret the contract of indemnity and guarantee • Construct the basics of Joint stock company • Recall the procedures of formation and winding up of joint stock company • Examine the relevance of business law and company law to individuals and businesses and the role of law in an economic, political and social context 	Local needs
10	RESEARCH METHODS	B422	<ul style="list-style-type: none"> • To understand the concept of research and to have an insight on mode of doing research • Students can integrate the research concepts and tools 	<ul style="list-style-type: none"> • Outline the basic concepts of research • Appraise the sampling design • Examine the different measurements and scaling techniques in research • Construct the methods of data 	National needs

			<p>to make the managerial decision problems</p> <ul style="list-style-type: none"> • Students can get adequate theoretical and practical background of Business research 	<p>collection and data analysis</p> <ul style="list-style-type: none"> • Recall and demonstrate the techniques of Interpretation and Report writing • Students can get examine and estimate the theoretical and practical background of business research 	
11	PRODUCTION MANAGEMENT	B423	<ul style="list-style-type: none"> • To make the students understand the decision-making process in planning, scheduling and control of production and operation functions • To know the concepts of production Management • To familiarizes the students in the concepts of production and Material analysis 	<ul style="list-style-type: none"> • To examine the concepts of production management • Assess the locate facilities, to design layout and to plan production with efficient methods • Choose and Compose Production Planning and control • Categorize and demonstrate the importance of material management • Outline and understand the role of storekeeper • To develop the students in the concepts of production and material analysis 	Global developmental needs
12	FINANCIAL MANAGEMENT	B424	<ul style="list-style-type: none"> • To familiarize oneself with the techniques used in financial management. • Knowledge about capital structure, cost of capital, impact of dividend decisions in the corporate world • Understand the different financing decision and estimate the value of different financial 	<ul style="list-style-type: none"> • To decide the student to know the importance and objectives of financial management • To choose the students to know the capital structure • To make use of the students to enable them to know leverage • To recall and discover the decision making for Capital budgeting • To Interpret the theories of dividend • To compile the financial plans for 	Regional needs

			instruments	practical decision making for manager	
13	INDUSTRIAL RELATIONS AND LABOUR LAWS	B425	<ul style="list-style-type: none"> • Students are to be acquainted with the industrial relations frame work in our country. • To Know the importance of the maintenance of industrial peace and effort to reduce the incidence of strikes, lockout and industrial strike are to be emphasized 	<ul style="list-style-type: none"> • Outline the basic concepts of Industrial Relations • Classify the different background of labour disputes • Discuss the functions of Trade Unions and Types of Collective Bargaining • Evaluate and Construct the Factories Act of 1948 • Recall and understand the Child Labour Act • Construct the Industrial Peace in the Industries 	National needs
14	ORGANIZATIONAL BEHAVIOUR	B426	<ul style="list-style-type: none"> • This course will enable students to describe specific 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 	<ul style="list-style-type: none"> • 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 	National needs

15	EXPORT MANAGEMENT	B520	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	Regional needs
16	BUSINESS ENVIRONMENT	B521	<ul style="list-style-type: none"> Provide an understanding of the role of business in society. To relate the Impact of Environment on Business in an integrative manner 	<ul style="list-style-type: none"> To appraise and Recall the basic concepts of Business and its environment To Interpret and Construct the 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 	Global developmental needs
17	SOCIAL RESPONSIBILITY PROJECT	B524J	<ul style="list-style-type: none"> The project is to provide exposure to various dimensions of corporate / individual social responsibility and its influence on the long term 	<ul style="list-style-type: none"> The student after completing this project would have understood various social issues in the society and understood his/her role and responsibility in overcoming such social issues and helping in bringing 	National needs

			<p>sustainability of the modern organizations. It emphasizes on the social responsibility of every individual in the society and its role in inclusive growth in the economy. It also focuses on sensitizing students with the life and needs of the downtrodden through village campus.</p>	<p>about equality and development in the society.</p>	
18	<p>ELECTIVE - I: PAPER - I: CONSUMER BEHAVIOUR</p>	B522A	<ul style="list-style-type: none"> To impart to the students an understanding the importance of consumer behaviour in marketing, its models and influence To understand the models of consumer behavior 	<ul style="list-style-type: none"> Relate the Knowledge of Consumer Behaviour Examine the Psychological influences of consumer behavior Determine & Interpret the Socio Cultural influences of consumer behavior Rephrase the Purchase Decision Behaviour Determine and Defend the Online Decisions Originate the consumer behavior models 	Regional needs
19	<p>ELECTIVE – I: PAPER II: RETAIL MANAGEMENT</p>	B522B	<ul style="list-style-type: none"> To impart to the students an understanding the importance of Retail management in the existing marketing field. Know various forms of retailing business techniques in India. 	<ul style="list-style-type: none"> To impart to the students an understanding the importance of Retail management in the existing marketing field. Know various forms of retailing business techniques in India. 	Global developmental needs

20	ELECTIVE - I: PAPER - III: SERVICES MARKETING	B522C	<ul style="list-style-type: none"> To understand the role of Service Marketing in the Society To make the students understand the uniqueness of Services Marketing To know about the Marketing of Services, Services sector contribution in the area of marketing Better exposure to students about the evolution and growth of service marketing sector They gain expert knowledge on marketing of the wide variety of service also available 	<ul style="list-style-type: none"> Recall the Concepts of service design and expanded service marketing mix becomes familiar to students offer better employability skills to students Summarize and Plan the Emerging Business sector like Healthcare, Hospitality, Tourism, Education, Logistics and Entertainment Industries Examine the challenges and opportunities in banking and financial service sector To Evaluate and Examine the students to gain knowledge on marketing on various services To motivate and estimate the Delivery Quality Service Formulate the Basic concepts of service 	Local needs
21	SUBJECT SKILL - I: PAPER - I: SALES & DISTRIBUTION MANAGEMENT	B523A	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	National needs
22	SUBJECT SKILL - I: PAPER II: BUSINESS	B523B	<ul style="list-style-type: none"> To provide an understanding of the theory taxation for business. 	<ul style="list-style-type: none"> Contrast the Tax System in India Evaluate the Classification of Taxes Interpret and Make use of GST 	Global developmental needs

	TAXATION		<ul style="list-style-type: none"> To gain a theoretical knowledge about taxation. 	<ul style="list-style-type: none"> Develop the SWOC of GST Recall the Types of GST Formulate the Basic information related to tax 	
23	SUBJECT SKILL - I: PAPER - III: PROJECT MANAGEMENT	B523C	<ul style="list-style-type: none"> The purpose of this paper is to acquaint the student with the concepts which are helpful in developing a projects To understand the project management concepts To impart knowledge on Project identification & Appraisal To help the students to identify feasible projects 	<ul style="list-style-type: none"> To Tell about the project management procedures To Rephrase the methods of financing such projects and controlling its cost To learn and determine the understanding about project evaluation To know about how to prepare project in Business and also develop it Examine the Administrative agencies for project management Originate the Implementation of Project Management 	Global developmental needs
24	SUBJECT SKILL - I: PAPER - IV: INVESTMENT MANAGEMENT	B523D	<ul style="list-style-type: none"> The purpose of this paper is to acquaint the student with the concepts which are helpful in developing a investment 	<ul style="list-style-type: none"> To enable and extend to the students to understand the nature, scope and structure of Investment Management To impart and organize the basic knowledge and skills on Investment To Apply and learn and understand the foreign Direct investment concepts Recall and Appraise Stock Exchange Originate Portfolio Management Formulate the Fundamental Analysis of different indicators 	Regional needs

25	NON MAJOR ELECTIVE – PAPER I - MANAGEMENT CONCEPTS	NBB504	<ul style="list-style-type: none"> To expose the students to the concepts of Business Management 	<ul style="list-style-type: none"> 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 	Local needs
26	STRATEGIC MANAGEMENT	B623	<ul style="list-style-type: none"> This course is to help students to integrate their knowledge of the functional areas of business into a holistic view of the firm and thereby determine and execute proper business level and corporate strategies The students will come to know the various strategies used by the firms at different instances. The students will inherit the strategic decision making skills 	<ul style="list-style-type: none"> Specific and show the emphasis will be placed on identifying key drivers and issues that serve as the inputs to developing a strategy; moreover, students will learn to assess the impact on various strategic decisions on the organizations wide array of stakeholders. Inference the knowledge of various business models The students will analyze and rephrase how strategic implementation takes place in organizations The students will evaluate and develop the strategies operated in different firms Recall the different Strategic Indent 	Global developmental needs

				<ul style="list-style-type: none"> Discover the Corporate Level Strategies 	
27	ENTREPRENEURIAL DEVELOPMENT	B624	<ul style="list-style-type: none"> To introduce basis of Entrepreneurship To familiar with concepts and process of Entrepreneurship Acquire the knowledge of current business opportunities 	<ul style="list-style-type: none"> To Interpret and induce entrepreneurial thoughts to the students To Construct ensure the qualities of entrepreneurs in the mind set of the students To predict, Judge and motivate the students to become entrepreneur To Utilize to start up the business plan and project To organize the business, how to create and assist To interpret the project and project formulation 	Global developmental needs
28	SOCIAL SENSITIVITY SKILLS	B625	<ul style="list-style-type: none"> This course intends to facilitate coexistence in a rapidly changing world characterized by diversity and exponential new development in social structure. The course aims create ability to practice harmonious living and develop necessary skills to enrich each other in society. The skills covered will be social adaptability, Environmental adaptability, legal adaptability. 	<ul style="list-style-type: none"> After the completion of the course, the students will be: More aware about their duties and responsibilities towards their society and fellow beings and will be able to assess the impact and consequences of their actions on the society. Able to understand the procedures to file FIRs and RTIs, applying for their driving licenses, PAN card, VISA and other legal documentations. Able to understand and exercise their rights and duties better and will have the knowhow of what to be done during the time of 	Regional needs

				<ul style="list-style-type: none"> emergencies. • Possessing the skills to examine environmental problems with a critical approach and will be able to develop sustainable models to help resolve and environmental issue. 	
29	ELECTIVE PAPER – II PAPER - IV: BANKING & INSURANCE	B626A	<ul style="list-style-type: none"> • Understand the role of Banking and Insurance sector in the changing environment • To know about the Banking Functions & Insurance Policies 	<ul style="list-style-type: none"> • To develop the basic concepts of banking • To rephrase the different types of deposits • To Construct and defend the negotiable instruments • To Recall the basic principles of Insurance • Interpret the types of Insurance • To analysis and Evaluate the banking and insurance 	National needs
30	ELECTIVE PAPER - II: PAPER - V: LOGISTICS & SUPPLY CHAIN MANAGEMENT	B626B	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
31	ELECTIVE PAPER - II: PAPER - VI:	B626C	<ul style="list-style-type: none"> • The objective of this course is to cover not only Quality 	<ul style="list-style-type: none"> • To find out the basic concepts of TQM 	Global developmental

	TOTAL QUALITY MANAGEMENT		Management concepts	<ul style="list-style-type: none"> • Demonstrate the SQC and Inspection • Construct and Evaluate the Theories of TQM • Examine JIT with analysis • Defend and Develop the concept TPM • Formulate the quality management concepts 	needs
32	SUBJECT SKILL - II: PAPER - V: FINANCIAL SERVICES	B627A	<ul style="list-style-type: none"> • To understand the role of financial institutions and Stock exchanges 	<ul style="list-style-type: none"> • Infer the basic Indian Financial System • Construct the concept NBFII • 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 	Regional needs
33	SUBJECT SKILL - II: PAPER - VI: CUSTOMER RELATIONSHIP MANAGEMENT	B627B	<ul style="list-style-type: none"> • The objective of this course is to enable the students to understand the importance of satisfying the customer in today's competitive world 	<ul style="list-style-type: none"> • Identify the basic concepts of CRM • Demonstrate the Customer Learning Relationships • Extend and Evaluate the CRM Program • Recall the CRM Process • Construct the Technology in CRM • Discover the functions of CRM 	Local needs
34	SUBJECT SKILL - II: PAPER - VII: BUSINESS TO BUSINESS MARKETING	B627C	<ul style="list-style-type: none"> • The Course attempts to expose the various concepts of Industrial marketing to students who have had a foundation course in 	<ul style="list-style-type: none"> • Construct the concept of Industrial Marketing • Compare the Segmentation of Marketing • Illustrate the Product Management 	Regional needs

			marketing	<p>Concept</p> <ul style="list-style-type: none"> List out the methods of Pricing Organize and Examine the Marketing Strategy Determine the various Levels of B2B marketing 	
35	SUBJECT SKILL - II: PAPER - VIII: CORPORATE SOCIAL RESPONSIBILITY	B627D	<ul style="list-style-type: none"> The Course attempts to expose the various concepts of Ethics and CSR activities 	<ul style="list-style-type: none"> 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
36	NON MAJOR ELECTIVE: PAPER - II: ORGANIZATIONAL BEHAVIOUR	NBB604	<ul style="list-style-type: none"> To establish knowledge in the areas of Personality, Perception and attitudes. 	<ul style="list-style-type: none"> 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, 	Global developmental needs

				importance of Organizational Behaviour	
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Name of the Programme: MBA

Programme Outcomes

PO1	Demonstrate intense knowledge in their discipline
PO2	Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
PO3	Develop expertise in their field of study through projects and research activities
PO4	Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
PO5	Develop social and ethical responsibility in the transfer and management of knowledge

Programme Specific Outcomes

PSO1	Management graduates will have ability to identify, formulate and analyse the problems relating to marketing, finance, human resource, operations management and hospital management
PSO2	Management graduates will be trained in the area of interpersonal skills and implement, use appropriate techniques, management skills and facilitating optimal solution
PSO3	Developing industry – ready managers with proper learning, training, research and consultancy, set up business enterprise and enhance diversified growth of entrepreneurship
PSO4	Emanate creative leadership, technical skills, passions and learning from its every corner to cast its rays towards empowering the rural youth to excel in their specialized domain using innovative technology

PSO5	Nurturing competent professionals with business and management acumen, who shall hold high degree of human values, social and ethical sensitivity in their professional and personal lives
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S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ORGANIZATIONAL BEHAVIOUR & MANAGEMENT PROCESS	MBA130T	<ul style="list-style-type: none"> To enable students to understand specific theories related to organizational behaviour and principles of management. To evaluate methods of motivating and rewarding individuals and groups and integrate individual, group and management level concepts. 	<ul style="list-style-type: none"> Students are expected to develop the ability to understand managerial / organizational situations. They will know the framework for managing individual and group performance. 	local
2	ECONOMICS FOR MANAGEMENT	MBA131T	<ul style="list-style-type: none"> To help students to develop a basic understanding on economic principles and concepts. To identify economic trends and current business scenario that affects individual firms and industry. 	<ul style="list-style-type: none"> Students are expected to become familiar with both principles of micro and macroeconomics. They would also become familiar with application of these principles to appreciate the functioning of both product and input markets as well as the economy. 	Regional
3	TOTAL QUALITY MANAGEMENT	MBA132T	<ul style="list-style-type: none"> To develop an understanding on product quality characteristics and service quality characteristics. To learn the key steps in the quality control. 	<ul style="list-style-type: none"> Quality management philosophies and tools to facilitate continuous improvement and ensure customer delight are learnt by students. Makes the students understand the quality management process in today's dynamic corporate world. 	local

4	ACCOUNTING FOR MANAGEMENT	MBA133T	<ul style="list-style-type: none"> To make the students get exposed to the various accounting systems, accounting control and linking the accounting system to the management decision making. To create an awareness of the importance and usefulness of the accounting function. 	<ul style="list-style-type: none"> Enables the students to learn the basic functions, principles and concepts of finance in management. Possess a managerial outlook on accounts 	National
5	ADVANCED BUSINESS STATISTICS FOR MANAGEMENT	MBA134T	<ul style="list-style-type: none"> To impart the knowledge to analyze the data using statistical techniques, such as hypothesis testing and regression estimation 	<ul style="list-style-type: none"> To facilitate objective solutions in business decision making under subjective conditions. 	local
6	MANAGEMENT INFORMATION SYSTEM	MBA135T	<ul style="list-style-type: none"> To provide an awareness among the upcoming managers, to understand the Concepts and Applications for Decision Making. It identifies the various information systems solution for vertical and horizontal workflow of business operations. 	<ul style="list-style-type: none"> Development of the computing skills among the budding managers of the tomorrow's world. Gains knowledge on effective applications of information systems in business. 	Regional
7	ENGLISH FOR EXECUTIVE COMMUNICATION	MBA136P	<ul style="list-style-type: none"> The objective of this paper is to introduce to the students to the basics of English. To enable learners to write in English precisely and effectively. 	<ul style="list-style-type: none"> The course will help the students to learn from the fundamentals of English. Helps them to learn higher level communication in the language. 	Local

8	BUSINESS APPLICATION SOFTWARE	MBA137X	<ul style="list-style-type: none"> To Understand the Applications of Word, Excel and Power Point 	Enhancement in the usage level of office tools	Local
9	BUSINESS RESEARCH METHODS	MBA230T	<ul style="list-style-type: none"> To introduce to the students the basic concepts of Research in Business. To highlight the need for Research in the functional areas of management. 	<ul style="list-style-type: none"> The course aims at equipping students with an understanding of the research process tools and techniques in order to facilitate managerial decision making. Students will learn to apply the principles of research methodology for the research design for the various mini and major projects of the MBA programme. 	Regional
10	MARKETING MANAGEMENT	MBA231T	<ul style="list-style-type: none"> To facilitate understanding of the conceptual framework of marketing and its applications in decision making under various environmental constraints. The course aims at making students understand concepts, philosophies, processes and techniques of managing the marketing operations of a firm. 	<ul style="list-style-type: none"> Students will learn to analyze markets and design customer driven strategies. By reading text and relating the concepts through cases the student will understand the concepts of marketing management. 	local
11	HUMAN RESOURCE MANAGEMENT	MBA232T	<ul style="list-style-type: none"> To provide basic knowledge of functional area of Human Resource Management. To provide functional areas of Human Resource Management for all future managers 	<ul style="list-style-type: none"> Students should be able to understand the basic HR concepts. Students will be able to understand the process of recruitment, selection, performance appraisal, training & development, 	Regional

			whether or not their career orientation lies in human resources.	compensation and employee retention approaches and strategies.	
12	FINANCIAL MANAGEMENT	MBA233T	<ul style="list-style-type: none"> To inculcate the basic concepts of mobilizing and utilizing the finance in an organization. To enable the students to understand the application of financial management techniques in wealth maximization. 	<ul style="list-style-type: none"> Provides support for decision making and enables managers to monitor their decisions for any potential financial implications and for lessons to be learned from experience and to adapt or react as needed. Helps in understanding the use of resources efficiently, effectively and economically to focus on wealth maximization rather than profit maximization. 	National
13	CORPORATE LEGAL ENVIRONMENT	MBA234T	<ul style="list-style-type: none"> To provide the students with practical legal knowledge of general business law issues to become more effective business leaders. This course is intended to make students understand various social, political, legal and economic in making managerial decisions. 	<ul style="list-style-type: none"> Legal insight will be established in the business practices according to the situation of changing environment. To integrate international law relating to Business laws in India 	National
14	APPLIED OPERATIONS RESEARCH FOR MANAGEMENT	MBA235T	<ul style="list-style-type: none"> To impact the knowledge of quantitative methods used in linear programming problems, transportation problems, assignment problems, project management, game theory problems, replacement and 	<ul style="list-style-type: none"> Students will be tested on the application of Operations Research to business related problems. To facilitate quantitative solutions in business decision making under conditions of certainty, risk and uncertainty. 	

			maintenance.		Regional
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S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
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15	PRODUCTION AND OPERATIONS MANAGEMENT	MBA236T	<ul style="list-style-type: none"> • To make the students understand the decision making process in planning, scheduling, and control of production and operation functions. • To develop the skills of Operations Research Models in planning, Scheduling, Project and inventory management. 	<ul style="list-style-type: none"> • Students will be able to know decision making process in various levels production and operation management and be able to apply those techniques to improve productivity. • To enable the students to apply the techniques of quality management to improve the productivity. 	Regional
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1	CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY	MBA330T	<ul style="list-style-type: none"> To familiarize the students with the understanding of issues and practices of corporate governance in the global and Indian context. To realize the importance of social responsibility as the key response for organization. 	<ul style="list-style-type: none"> Students will come to know about issues and practices of corporate governance in Global and Indian context. Students understand the importance of social responsibility as a key enabler in the society. 	National
2	EXPORT AND IMPORT MANAGEMENT	MBA331T	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Helps in learning the Cross-cultural export and import management for successful operations. Students learn to handle the export-import business. 	Global developmental
3	DIGITAL MARKETING	MBA332A	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 developmental needs

			Internet, Social Media and Mobile Marketing.		
4	CORPORATE FINANCE	MBA332B	<ul style="list-style-type: none"> • To understand the Tact's & Techniques methods of corporate finance. • To understand the role of financial manager as a decision maker is to be emphasized with a managerial focus. 	<ul style="list-style-type: none"> • It assist the students to get exposure through application oriented problems and discussions • Helps to develop analytical skills in the corporate. 	National
5	PROJECT MANAGEMENT	MBA332C	<ul style="list-style-type: none"> • To understand the concept of project and steps in project management and to enable the students to prepare business proposals. • To enable the students to evaluate the technical feasibility, financial viability, market acceptability and social desirability of projects and to be effective as project managers and as part of project teams. 	<ul style="list-style-type: none"> • Understanding the key Project Management concepts and developing working competence in the use of a Project Management Software. • Students learn to be effective as project managers and as part of project teams. 	Regional
6	COUNSELING SKILLS FOR MANAGERS	MBA332D	<ul style="list-style-type: none"> • To develop basic skills among students to independently handle a 	<ul style="list-style-type: none"> • Updating the current systems and practices of managing work force. 	

			<p>wide range of employee counseling and performance counseling.</p> <ul style="list-style-type: none"> To make them understand the uses counseling employees. 	<ul style="list-style-type: none"> Provides knowledge for the dealing with the issues relating to management of workforce. 	Global developmental needs
7	MARKETING OF HOSPITAL SERVICES	MBA332E	<ul style="list-style-type: none"> To inculcate application of Marketing for service businesses from a managerial perspective. To understand and appreciate the concept of marketing the services in theory and apply in market. 	<ul style="list-style-type: none"> Enhance students in learning the concept of healthcare marketing towards promoting hospital services. Provides a managerial frame work of service marketing. 	Regional
8	BRAND AND PRODUCT MANAGEMENT	MBA333A	<ul style="list-style-type: none"> To impart in-depth knowledge to the students regarding the theory and practice of Brand and Product Management. To understand the need to develop new products. 	<ul style="list-style-type: none"> To successfully establish and sustain brands and lead to extensions. To give students a deeper understanding about the process of brand building in a competitive business scenario. 	National
9	MICRO FINANCE	MBA333B	<ul style="list-style-type: none"> To enable students to comprehend the importance of micro finance. To understand the 	<ul style="list-style-type: none"> Students will possess good knowledge in micro finance management. Induce the minds of students to apply in the 	

			techniques involved in their evaluation.	field of micro finance.	Regional
10	QUALITY MANAGEMENT	MBA333C	<ul style="list-style-type: none"> • To expose the multi-disciplinary students joining MBA to the Principles of Quality Management, to equip the students with an understanding for statistical Quality Control • To develop in the students an understanding of Benchmarking, Total Quality Management and ISO – 9000 and other modern quality management methods and systems 	<ul style="list-style-type: none"> • Students will understand the tools necessary to solve Quality management problems. • Helps in learning the Quality perspectives in organization. 	Regional
11	PARTICIPATIVE MANAGEMENT	MBA333D	<ul style="list-style-type: none"> • To provide inputs to the students on how to work in a dynamic and empowered environment. • To help the students to learn the basic concepts of participative management. 	<ul style="list-style-type: none"> • Helps in exploring the contemporary knowledge relating to participative management. • Students will gain the knowledge relating to human relation problems and their solutions. 	National
12	HEALTH INSURANCE AND MEDICAL	MBA333E	<ul style="list-style-type: none"> • To acquaint students to the concept of health insurance, product 	<ul style="list-style-type: none"> • Students learn the health insurance claim policies and the insurance products 	

	TOURISM		<p>development and various health insurance products.</p> <ul style="list-style-type: none"> • To develop knowledge in the area of health sector reform with a special emphasis on Indian health sector related policies. 	<p>for medical tourism.</p> <ul style="list-style-type: none"> • Conceptualizing the importance and monitoring quality in health care with a special emphasis on tools for quality improvement. 	National
13	CUSTOMER RELATIONSHIP MANAGEMENT	MBA334A	<ul style="list-style-type: none"> • To make the students understand the organizational need, benefits and process of creating long term value for individual customer. • To create awareness about formulation and implementation of CRM and to e-CRM and various CRM packages. 	<ul style="list-style-type: none"> • To use strategic customer acquisition and retention techniques in CRM. • To get exposed in operating technologies in CRM 	National
14	STRATEGIC INVESTMENT AND FINANCE DECISIONS	MBA334B	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Helps to induce the student's knowledge in application oriented. • The course manipulates the concepts in practical way. 	Global developmental

			it in their job field.		needs
15	LOGISTICS MANAGEMENT	MBA334C	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 developmental needs
16	STRATEGIC HUMAN RESOURCE MANAGEMENT AND DEVELOPMENT	MBA334D	<ul style="list-style-type: none"> • To introduce to the students the emerging field of strategic human resource management. • To help the students to understand the nature of the changing global business environment and the role of HR. 	<ul style="list-style-type: none"> • Students gain knowledge over the subject. • Students develop appropriate skills for managing human work forces strategically. 	National
17	PATIENT CARE MANAGEMENT	MBA334E	<ul style="list-style-type: none"> • To understand the processes and details related to effective 	<ul style="list-style-type: none"> • Students' will learn to facilitate managerial decision making in patient 	

			<p>patient care management and to further increase the satisfaction levels of patients.</p> <ul style="list-style-type: none"> • To familiarize students on patients care management systems. 	<p>care management.</p> <ul style="list-style-type: none"> • Developing skills in planning, building and managing patients care. 	National
18	RETAIL MANAGEMENT	MBA335A	<ul style="list-style-type: none"> • To equip the students with the fundamental framework of retail marketing. • To understand the various elements involved in the making of retail strategy including retail location strategy and store design strategies. 	<ul style="list-style-type: none"> • To manage the retail chains in India. • To understand the retail customer's behaviour in India. 	Regional
19	INTERNATIONAL TRADE FINANCE	MBA335B	<ul style="list-style-type: none"> • To understand the international markets for payments and credit. • To understand the evaluation of international investments. 	<ul style="list-style-type: none"> • 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 developmental needs
20	ENTERPRISE RESOURCE PLANNING (ERP)	MBA335C	<ul style="list-style-type: none"> • To make the students to participate in planning and implementation of advanced enterprise wide systems and 	<ul style="list-style-type: none"> • Enables the Knowledge of ERP implementation cycle. • Develops the awareness of core and extended modules of ERP. 	

			<p>technologies.</p> <ul style="list-style-type: none"> • To expose the students to the technical aspects of ERP systems, particularly to those that help in the process of infrastructure planning, selection, implementation, pitfalls, and administration of these systems. 		National
21	KNOWLEDGE MANAGEMENT AND OCCUPATIONAL TESTING	MBA335D	<ul style="list-style-type: none"> • The objective of the course is to prepare HR managers to participate in the organizational knowledge management efforts and facilitate management of knowledge. • To develop a perspective about the intricacies and ethics of use of psychological tests. 	<ul style="list-style-type: none"> • Provides a theoretical background for supplementing the understanding knowledge management and psychological assessment. • Helps to learn to interpret test profiles and explore patterns in interpretation from several tests. 	Regional
22	HOSPITAL ARCHITECTURE PLANNING	MBA335E	<ul style="list-style-type: none"> • To expose the students to planning and operation of hospitals in a detailed manner which will include all facets of hospital 	<ul style="list-style-type: none"> • Students will be Equipped with an understanding and to learn the planning of a full-fledged hospital. • Ensure the students' knowledge about hospital 	

			<p>planning activities covering every department that is involved both in clinical care as well as supportive services.</p> <ul style="list-style-type: none"> • To Prepare Project Management for hospital and other organizations. 	planning and Architecture.	Local
23	SOFT SKILLS	MBA337P	<ul style="list-style-type: none"> • Understand the concept of employability skills and applications in the organization. • To lay foundation for developing the skills towards employment. 	<ul style="list-style-type: none"> • Students will come to know about employability skill in Global and Indian context. • Provides an understanding about the various aspects of skill development in an organization 	National
24	STRATEGIC MANAGEMENT	MBA430T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 developmental needs
25	INTERNATIONAL BUSINESS MANAGEMENT	MBA431T	<ul style="list-style-type: none"> • To introduce students to the world of global business and to expose them to the realities of 	<ul style="list-style-type: none"> • Students will come to know about the world of global business, the competitions that they 	

			<p>doing business internationally.</p> <ul style="list-style-type: none"> To familiarize students with the competitiveness of global industry and the various theoretical frameworks available. 	<p>ought to face and the various theoretical frameworks that are available.</p> <ul style="list-style-type: none"> Develops an appreciation of business issues and their influence on International business decision making. 	<p>Global developmental needs</p>
26	RURAL MARKETING	MBA432A	<ul style="list-style-type: none"> To provide conceptual understanding on the Rural Marketing. To create awareness about the applicability of the concepts, techniques and processes of marketing in rural context. 	<ul style="list-style-type: none"> Perspectives of rural marketing and the knowledge of the emerging managerial initiatives. To know the relevant frameworks in rural marketing, institutions engaged in rural marketing 	<p>Regional</p>
27	BANKING AND INSURANCE MANAGEMENT	MBA432B	<ul style="list-style-type: none"> To impart knowledge of various functional areas and risk management in banking and insurance sector. To bring out relevant information of banking & insurance and its application. 	<ul style="list-style-type: none"> It nurtures the information about the management of banking and insurance. Enhance with managing skills in banking and insurance fields. 	<p>National</p>
28	INVENTORY MANAGEMENT	MBA432C	<ul style="list-style-type: none"> To provide students with an appreciation of the crucial role of Inventory and Materials Management 	<ul style="list-style-type: none"> Enables to monitor inventory levels and projected item availability and to perform basic warehousing operations 	

			<p>in the efficiency, competitiveness, and profitability of a business organization.</p> <ul style="list-style-type: none"> • To introduce the student to the formulation and application of methods and models for Inventory Management. 	<p>including receiving, putting away, picking and shipping.</p> <ul style="list-style-type: none"> • Students learn to analyze and develop inventory management policies under deterministic and stochastic environments. 	Regional
29	TALENT MANAGEMENT	MBA432D	<ul style="list-style-type: none"> • To enable the students to understand the importance of Talent Management. • To impart the students the application of Talent Management. 	<ul style="list-style-type: none"> • Helps students to gain knowledge in talent management practices. • improvement in the Skills needed for the talent management and performance management. 	National
30	LOGISTICS FOR HEALTH CARE SERVICES	MBA432E	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Provides learning the supply chain management in hospitals. • Creates awareness among the students with basic concepts of logistics for health care services. 	Global developmental needs
31	ADVERTISING AND SALES	MBA433A	<ul style="list-style-type: none"> • To acquaint the students develop an 	<ul style="list-style-type: none"> • Insight into the importance of advertising and sales 	

	PROMOTION		<p>effective Advertising program.</p> <ul style="list-style-type: none"> • Appreciate from a client's side perspective as well as an agency. 	<p>promotion campaigns.</p> <ul style="list-style-type: none"> • To plan the objective setting in relation to consumer decision making processes. 	National
32	STRATEGIC COST MANAGEMENT AND CONTROL	MBA433B	<ul style="list-style-type: none"> • To acquaint the students with concepts and various aspects of cost management from strategic perspective. • To induce the students mind and skill to practice and apply where it is to be used 	<ul style="list-style-type: none"> • To gain knowledge about the strategic cost management • Learn to control and manage various cost management practices in the organization. 	National
33	INFORMATION TECHNOLOGY IN SUPPLY CHAIN MANAGEMENT	MBA433C	<ul style="list-style-type: none"> • To appreciate the role of IT in supply chain. • To understand data mining in supply chain and to analyze IT practices in supply chain. 	<ul style="list-style-type: none"> • 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 developmental needs
34	ORGANIZATION DEVELOPMENT AND CHANGE MANAGEMENT	MBA433D	<ul style="list-style-type: none"> • To impart the students an overview of organizational change. • To help the students to gain knowledge on change management 	<ul style="list-style-type: none"> • Teaches the students how to facilitate continuous improvement in organization. • Familiarizes the students with the process of 	

			and OD.	organization development and change and its importance.	Regional
35	RISK AND DISASTER MANAGEMENT	MBA433E	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 developmental needs
36	CONSUMER BEHAVIOR	MBA434A	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 plans. 	Global developmental needs
37	SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT	MBA434B	<ul style="list-style-type: none"> • To understand the techniques of diversifying the risk in financial investments. • To have a reasonable knowledge of Indian capital market operations and 	<ul style="list-style-type: none"> • Helps to gain the knowledge and apply it in practically in the organization. • Students get exposure and use it in business at future. 	Global developmental needs

			investment opportunities.		
38	MATERIALS AND STORES MANAGEMENT	MBA434C	<ul style="list-style-type: none"> To understand how material management should be considered for profitability and how to establish the best methods of inventory analysis and create performance measures. To appreciate the role of store management and forecasting and to analyze the management aspects of health and safety in work 	<ul style="list-style-type: none"> Student gains knowledge on effective utilization of materials in manufacturing and service organization Understanding the concepts and principles materials and store management. 	Regional
39	COMPENSATION MANAGEMENT	MBA434D	<ul style="list-style-type: none"> To impart to the students the basic concepts of performance and compensation management. To help the students to be familiar with wage and salary administration. 	<ul style="list-style-type: none"> Helps students to relate between compensation and competencies of employees. Develops the basic knowledge on compensation payments. 	National
40	MANAGEMENT OF HOSPITAL SERVICES	MBA434E	<ul style="list-style-type: none"> To enable the students gain insights into various aspects like 	<ul style="list-style-type: none"> Students are expected to develop the ability to understand and manage 	

			<p>importance, functions, policies and procedures, equipping, controlling, co-ordination, communication, staffing, reporting and documentation of both clinical and non-clinical services in a hospital</p> <ul style="list-style-type: none"> • To introduce the management concepts and principles of hospital services. 	<p>hospital services.</p> <ul style="list-style-type: none"> • Evaluation of various decisions of the hospital services. 	<p>Global developmental needs</p>
41	SERVICES MARKETING	MBA435A	<ul style="list-style-type: none"> • To make the students understand the uniqueness of services marketing • To identify and analyze the various components of the services mix. 	<ul style="list-style-type: none"> • To understand the important of Services and its applications in Marketing. • To understand the essential components of a service quality. 	<p>Global developmental needs</p>
42	MERGERS AND ACQUISITIONS	MBA435B	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<p>Global developmental needs</p>

43	TOTAL PRODUCTIVITY MANAGEMENT	MBA435C	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> To know the concept of productivity and its models To analyze organizational performance 	Regional
44	TRAINING FOR EFFECTIVE PERFORMANCE	MBA435D	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Development of managerial outlook on the subject. Brings out the importance of training and development in organization. 	Global developmental needs
45	HOSPITAL WASTE MANAGEMENT	MBA435E	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

			hazardous wastes.		
46	EMPLOYABILITY SKILLS	MBA437X	<ul style="list-style-type: none"> • Identify the knowledge and skills required for obtaining and keeping employment. • Course work will emphasize individual skill assessments, interpersonal communication skills, workplace responsibilities, teamwork skills, safety issues, and personal management skills for the workplace. 	<ul style="list-style-type: none"> • To help students explore their values and career choices through individual skill assessments • To make realistic employment choices and to identify the steps necessary to achieve a goal 	National

Programme Name : BA Tamil

Programme Outcomes (POs) of B.A.,Tamil

இளங்கலைப் பாடத் திட்டத்தின் வாயிலாக மாணவர்கள் கீழ்க்கண்ட திறன்களைப் (பெறுவர்) பெற்றிருப்பர்.

PO1: தாங்கள் புதிதாகக் கற்றுணர்ந்தவற்றை ஆய்ந்து எடுத்துரைக்கின்ற திறனைப் பெற்றிருப்பர். தாங்கள் கற்றுணர்ந்தவற்றுள் புதிய சிந்தனைகளைப் புகுத்தி வேலைவாய்ப்பினைப் பெறவும் சுய தொழில் தொடங்கவும் தேவையான திறன்களைப் பெற்றிருப்பர்.

PO2: மேற்படிப்பு படிக்க வேண்டும் என்ற எண்ணத்தையும் தொழில்முனைவோராகிச் சாதிக்க வேண்டும் என்ற தூண்டுதலையும் பெற்றிருப்பர்.

PO3: அறவிழுமிய உணர்வுள்ளவர்களாகவும் சமூகப் பொறுப்புள்ள குடிமகனாகவும் விளங்குகின்ற பண்பினைப் பெற்றிருப்பர்.

PO4: தனிமனித வாழ்விலும் பொது வாழ்விலும் ஏற்படுகின்ற சிக்கல்களுக்குப் பகுப்பாய்வுத் திறன்,, பன்னோக்கு சிந்தனைத் திறன், முடிவெடுக்கும் திறன் ஆகியவற்றைப் பயன்படுத்தித் தீர்வு காணும் திறனைப் பெற்றிருப்பர்.

PO5: எழுத்தாற்றல் மற்றும் பேச்சாற்றல் திறன்கள் வாயிலாகத் தங்களை மேம்படுத்திக் கொள்கின்ற திறனைப் பெற்றிருப்பர்.

Program Specific Outcomes (PSOs) of B.A.,Tamil

இளங்கலைப் பாடத் திட்டத்தின் வாயிலாக மாணவர்கள் கீழ்க்கண்ட திறன்களைப் (பெறுவர்) பெற்றிருப்பர்.

PSO1: தமிழ்நாடு அரசுத் தேர்வாணையம், பல்கலைக்கழக மானியக் குழுப் போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்கான திறன்களைப் பெற்றிருப்பர்.

PSO2: கணினித் தமிழ், பயிற்சி பெறுவதன் மூலம் வேலை வாய்ப்பில் முன்னுரிமையும் தனியாகக் கணினிப் பயிற்சி மையம் வைத்து நடத்திடவும் பல ஆய்வேடுகளைத் தட்டச்சு செய்தும் தனித்தியங்கக்கூடிய திறன்களைப் பெற்றிருப்பர்.

PSO3: அறவிழுமிய உணர்வுள்ளவர்களாகவும் சமூகப் பொறுப்புள்ள குடிமகனாகவும் விளங்குகின்ற பண்பினைப் பெற்றிருப்பர்.

PSO4: தமிழைப் பிழையின்றிக் கற்பதன் வாயிலாகச் செய்தித்தாள்களில் மெய்ப்புத்திருத்துநர், தொலைக்காட்சிகளில் செய்தி வாசிப்பாளர் போன்ற பல்வேறு ஊடகப் பணிகளுக்குச் செல்கின்ற திறன்களைப் பெற்றிருப்பர்.

PSO5: சிறப்புத் தமிழ் கற்பதன் வாயிலாகச் சிறந்த பேச்சாளராகவும் எழுத்தாளராகவும் உருவாவதற்கான தனித்திறன்களைப் பெற்றிருப்பர்.

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. தன்வரலாற்றுப் புதின எழுத்துமுறை அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல்.	f

2	நன்னூல் (எழுத்ததிகாரம்)	TA108	தமிழ் எழுத்துகளின் அமைப்பு - சொற்களின் உருவாக்கம் - சொற்களின் புணர்ச்சி ஆகியவற்றை அறிமுகப்படுத்துதல் - அடிப்படை இலக்கண அறிவை ஏற்படுத்துதல்.	நன்னூலில் உள்ள பாயிரச் செய்திகளை அறிந்துகொள்வர். எழுத்துக்களின் வகை, பிறப்பு, வடிவம் ஆகிய செய்திகளை அறிந்துகொள்வர். பதவியலில் உள்ள சொற்களை	national
3	செம்மையாக்கமும் 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	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	global

			<p>கொள்வதற்கும் சந்திபிழைகள் வராமல் எழுதுவதற்குமான அறிவைப் பெறுதல். மொழியின் இன்றியமையை அறிந்து கொள்ளுதல் எழுதும் மற்றும் வாசிக்கும் அறிவையும் திறனையும் பெறுதல்</p>	<p>கடைபிடிக்கக்கூடிய மிக முக்கிய ஒன்று அடிகுறிப்பும் துணைநூற்பட்டியல் இடுவது. இவை கருத்து திருட்டைக் குறைப்பதற்கான வழியாகும். அந்தவகையில் எழுத்துமுறை அறிவையும் வாசிப்புத் திறனையும் அதிகப்படுத்துதல். நூல் வடிவமைப்பிற்கான அறிவைப் பெறுதல்.</p>	
4	<p>கவிதை, நாடகம், உரைநடை</p>	<p>TA207</p>	<p>கவிதை, நாடகம், உரைநடை ஆகிய இலக்கிய வகைமைகளின் வரலாற்று அறிவைப் பெறுதல். நூறு ஆண்டுகாலத்தில் தமிழகச் கவிதைகளில் ஏற்பட்டுள்ள வளர்ச்சி, கருத்தியல் வளர்ச்சி ஆகிய அறிவையும் கவிதைகளை வாசிக்கும் அறிவையும் திறனையும் பெறுதல்</p>	<p>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,</p>	<p>global</p>

				<p>பண்பாடு, பாலினம் சார்ந்து நாடகங்களை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல்.</p> <p>உரைநடை எழுத்துமுறை அறிவையும் வாசிப்பு அறிவையும் வாசிப்புத் திறனையும் பெறுதல்.</p>	
5	நன்னூல் - சொல்லதிகாரம்	TA208	<p>தமிழ்ச் சொற்களின் அமைப்பு - சொற்களின் வகைப்பாடு - சொற்களின் பயன்பாடு ஆகியவற்றை அறிமுகப்படுத்துதல் - அடிப்படை இலக்கண அறிவை ஏற்படுத்துதல்.</p>	<p>தமிழ்மொழியின் சொற்கள் அமைப்பில் உள்ள அடிப்படைக் கட்டமைப்பினை அறிந்து கொள்வர்.</p> <p>சொற்களை அமைப்பினைப் பிற மொழிகளுடன் ஒப்பிட்டு நோக்கும் திறனைப் பெறுவர்.</p> <p>இலக்கணத்தின் சொல் அமைப்புகளைத் தெரிந்துகொண்டு அதனை எழுதுகின்ற திறன்களைப் பெற்றிருப்பர்.</p> <p>ஆங்கில மொழியில் எளிதாகப் பேசலாம் என்ற தன்னம்பிக்கையினைப் பெறுவர்.</p> <p>சொற்களை அமைப்பினைப் பிற மொழிகளுடன் ஒப்பிட்டு நோக்கும்</p>	national

				திறனைப் பெறுவர்.	
6	சமயப் பாடல்களும் சிற்றிலக்கியங்களும்	TA1023	<p>தமிழின் வளமான சமய இலக்கிய மரபை அறிமுகப்படுத்துதல் - பல்சமய நோக்கு, செல்நெறி ஆகியவற்றைப் புரிந்துணர உதவுதல் - சிற்றிலக்கிய மரபை அறிமுகப்படுத்துதல் - சிற்றிலக்கியங்களின் பன்மைத்துவத்தை அறிமுகம் செய்தல்.</p>	<p>மொழித்துறை மாணவர்களுக்குப் சிற்றிலக்கிய மற்றும். பக்தி இலக்கியம் புலமை தேவை என்பதை அறிந்து கொள்வர்.</p> <p>சமயம் சார்ந்த செய்திகளை பக்தி வாயிலாக அறிந்து கொள்வர்.</p> <p>சிற்றிலக்கியத்தின் மரபை அறிந்து கொள்வர்.</p> <p>பக்தி இலக்கியத்தின் வாயிலாக சொல்வளங்களை கையாளுகின்ற வளங்களை பெறுவர்.</p> <p>சிற்றிலக்கியங்கள் மூலம் மக்களின் வீரம் மற்றும் வாழ்க்கை முறை மற்றும் நாட்டின் வளம் போன்ற செய்திகளை அறிந்தனர்</p> <p>சமய கொள்கைகளை விளங்கிக் கொள்வர்.</p> <p>சிற்றிலக்கிய நுட்பங்களை உணர்ந்து கொண்டு சிறந்த சிற்றிலக்கியங்கள்</p>	global

				படைகின்ற திறன்களைப் பெற்றிருப்பர்.	
7	<u>யாப்பருங்கலக்காரி</u> <u>கை</u>	TA308	யாப்பிலக்கணத்தின் மரபையும், இலக்கணத்தையும் அறிமுகப்படுத்துதல் - பிழையற பேசுதல், எழுதுதல்- யாப்பிலக்கணத்தின் மூலம் செய்யுள்(பாட்டு)இயற்றும் ஆர்வத்தை ஏற்படுத்துதல்.	யாப்பிலக்கணத்தின் மரபையும், இலக்கணத்தையும் அறிமுகப்படுத்துதல் - பிழையற பேசுதல், எழுதுதல்- யாப்பிலக்கணத்தின் மூலம் செய்யுள்(பாட்டு)இயற்றும் திறன்களைப் பெற்றிருப்பர்.	national
8	தமிழ்ப் பண்பாட்டு வரலாறு - 1	TA309	சங்ககால மக்களின் வாழ்வியலை அறிந்து கொள்வதன் மூலம் தமிழ்ப் பண்பாட்டின் சிறப்பினைப் புரிந்து கொள்வர். கழகக்கால சேர , சோழ, பாண்டிய மன்னர்களின் ஆட்சிச் சிறப்பை அறிவதன் மூலம் அரசியல் அறிவைப் பெறுவர்.	நீக்கிரோ முதல் திராவிடப் பண்பாடு வரை உள்ள உலகப் பண்பாடுகளை ஆராயும் அறிவை வளர்த்துக் கொள்வர். ஐந்திணை சார்ந்த நிலவியல் அமைப்பினை அறிந்து கொள்வர். தொன்மையான தமிழ்ப் பண்பாட்டினைப் பாதுகாத்து அடுத்தத் தலைமுறைக்குக் கடத்தும் மனப்பான்மையைப் பெறுவர்.	national

9	காப்பியங்கள்	TA410	<p>தமிழ் மொழியில் உள்ள காப்பியங்கள் குறித்தும் அவற்றின் உறவுகள் குறித்தும் அறிந்துகொள்வது. அவற்றின் வழியாக அக்கால மக்களின் சமூக அரசியல் பொருளாதார பின்புலம் முதலியன குறித்து அறிந்துகொள்வது.</p>	<p>தமிழின் காப்பிய இலக்கணம் குறித்து அறிந்துகொள்ளுதல் மற்றும் முதல் காப்பியமான சிலப்பதிகாரம் குறித்து அறிந்துகொள்வர்.</p> <p>மணிமேகலை மற்றும் சீவகச்சிந்தாமணி காப்பிய அறிமுகம் மற்றும் சமண பௌத்த சமயங்கள் பற்றிய அறிந்துகொள்வர்.</p> <p>பெரியபுராணம் மற்றும் சைவ சமயம் குறித்த அடிப்படைச் சொய்திகளை அறிந்துகொள்வர்.</p> <p>கம்பராமாயணம் அறிமுகம் மற்றும் வைணவச் சமயம் குறித்த அடிப்படைச் சொய்திகளை அறிந்துகொள்வர்.</p> <p>இரட்சணிய யாத்திரிகம், சீறாப்புராணம் அறிமுகம் மற்றும் கிருத்துவ, இசுலாம் சமயங்கள் குறித்த அடிப்படைச் சொய்திகளை அறிந்துகொள்வர்.</p>	global
10	தமிழ்ப் பண்பாட்டு வரலாறு - 2	TA412	<p>நாயக்கர் காலத் தமிழ் மக்களின் வாழ்வியல் பற்றி அறிந்து கொள்வர்.</p>	<p>சமூக சீர்த்திருத்தவாதிகளின் கொள்கைகளை அறிந்து கொள்வதன்</p>	national

			ஐரோப்பியர் கால தமிழகச் சூழலை அறிந்து கொள்வதன் மூலம் விடுதலைப் போராட்டத்தின் நிகழ்வுகளை நினைவுகூர்வர். பிற்கால தமிழக ஆட்சிமுறையினை அறிந்து கொள்வர்.	மூலம் அரசியலில் பெரும் மாற்றங்களை உண்டாக்கும் திறனைப் பெறுவர். விஜய நகரப் பேரரசு உள்ளிட்ட பல்வேறு பண்பாட்டுகள் இந்தியாவுக்கு வழங்கிய கலைக்கொடையை மதிப்பிடும் திறனைப் பெறுவர்.	
11	இலக்கியம் 5 : அற இலக்கியங்கள்	TA501	தமிழ் அற இலக்கியங்களின் காலம், நோக்கம், வளர்ச்சிநிலை சமூகக் கட்டமைப்பு போன்றவற்றை அறிந்து கொள்ளல்.	தமிழின் அற இலக்கிய மரபை அறிந்துகொள்ளுதல்.	global
12	இலக்கணம் 5 : புறப்பொருள் வெண்பாமாலை	TA502	பழந்தமிழர் போர் முறை, போருக்கான காரணம், அழிவு, அறம் முதலியவற்றை அறிந்து கொள்ளுதல் - பண்டைத் தமிழிலக்கியங்களில் பயின்று வரும் புறத்திணை மரபை அறிமுகப்படுத்துதல்.	பண்டைத் தமிழிலக்கியங்களில் பயின்று வரும் புறத்திணை மரபை அறிதல்.	national
13	தமிழ்மொழி வரலாறு	TA503	காலந்தோறும் பிறமொழிக் கலப்பாலும் ஆட்சியினராலும்	தமிழ் மொழியின் வரலாற்றை அறிந்து கொள்ளல்.	national

			<p>தாக்கப்பட்டு அம்மொழியடைந்த மாற்றத்தினைக் கற்றுக் கொள்வதன் மூலமாக ஒரு மொழியின் வளர்ச்சிப் போக்கினை உணர்ந்து கொள்ளல் போன்றவற்றை நோக்கமாகக் கொண்டு இப்பாடம் கற்பிக்கப்படுகிறது.</p>		
14	இலக்கியத் திறனாய்வு	TA504	<p>தினைக் 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 தெளிவை மாணவர்கள் உணரும் நோக்கில் இப்பாடம்</p>	<p>இலக்கியங்களில் இடம்பெற்றுள்ள பண்பாட்டுக் கூறுகளையும் சமூக ஏற்றத்தாழ்வுகளையும் திறனாய்வு மூலம் அறிந்துகொள்ளுதல்.</p>	global

			உருவாக்கப்பட்டுள்ளது.		
15	விருப்பப்பாடம் 1 : நாட்டுப்புறவியல்	TA505	நாட்டுப்புறவியலின் வரலாற்றை அறிமுகப்படுத்துதல் - அதன் வகைமைகளை அறிமுகப்படுத்துதல்.	நாட்டுப்புறவியலை அறிமுகப்படுத்திக் கொள்ளுவதன் வாயிலாகச் சமகால நாட்டார் பண்பாட்டை அறிதல்.	Local
16	விருப்பப்பாடம் 2 : தமிழ் இலக்கியவரலாறு 1	TA505B	தமிழ் இலக்கியங்களின் காலம் படிநிலை வளர்ச்சி வகை பாடுபொருள் வடிவம் முதலியவற்றுடன் தமிழ் இலக்கணப் பனுவல்களை அறிந்துகொள்ளல்.	தமிழ் இலக்கியங்கள் வளர்ந்த வரலாற்று அறிவு பெறல்.	national
17	NME : தமிழ் இலக்கியம் ஓர் அறிமுகம்	TA506	தமிழ் இலக்கியங்களை அறிமுகப்படுத்திக் கொள்வதன் வாயிலாகப் போட்டித் தேர்வுக்குத் தயாராதல்.	போட்டித் தேர்வுகளை எதிர்கொள்ளும் திறன் பெறுதல்.	Regional
18	இலக்கியம் 6 : சங்க இலக்கியம் (அகம் - புறம்)	TA601	தமிழின் திணை மரபை அறிமுகப்படுத்துதல் - அகத்திணை, புறத்திணை இலக்கியங்களை அறிமுகப்படுத்துதல்.	தமிழின் திணை மரபை அறிதல் - அகத்திணை, புறத்திணை இலக்கியங்களை அறிதல்.	global
19	இலக்கணம் 6 : நம்பியகப்பொருள்	TA602	பழந்தமிழரின் அகப்பொருள் ஒழுக்கம், திணைப்பாகுபாடு,	பழந்தமிழரின் அகப்பொருள் ஒழுக்கம், திணைப்பாகுபாடு, காலம்,	national

			காலம், களவுக்காலத்தும் கற்புக்காலத்தும் மேற்கொண்ட செயற்பாடுகள், சமூகக் கட்டமைப்புப் போன்றவற்றை அறிந்து கொள்ளல்.	களவுக்காலத்தும் கற்புக்காலத்தும் மேற்கொண்ட செயற்பாடுகள், சமூகக் கட்டமைப்புப் போன்றவற்றை அறிதல்.	
20	திராவிட மொழிகளின் ஒப்பிலக்கணம்	TA603	திராவிட மொழிகள் - இயல்புகள் - ஒருங்கிணைப்பு ஆகியவற்றை அறிமுகப்படுத்துதல்.	திராவிட மொழிகளைப் பற்றி அறிதல்.	global
21	அச்ச ஊடகம்	TA604	அச்ச ஊடகத்தின் வருகை - பயன் - இன்றியமையாமை - தமிழில் இதழியல் வரலாறும் வளர்ச்சியும் ஆகியவற்றை அறிமுகப்படுத்துதல்.	தமிழ் இதழியல் வரலாற்றை அறிதலின் வாயிலாக ஊடகத்தின் வலிமையை உணர்தல்.	global
22	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
23	விருப்பப்பாடம் 2 : தமிழ் இலக்கிய	TA605B	தமிழ் இலக்கியங்களின் காலம், படிநிலை வளர்ச்சி, வகைப்பாடு,	தமிழ் இலக்கிய வரலாற்றையும் வளர்ச்சிப் போக்கையும் அறிதல்	national

	வரலாறு 2		பொருள், வடிவம் ஆகியவற்றுடன் தமிழ் இலக்கணப் பனுவல்களை அறிந்துகொள்ளல்		
24	NME : தமிழ் மொழியின் வளர்ச்சிப் போக்குகள்	TA606	மாணவர்களுக்குத் தொல்காப்பியம் முதல் சமகாலம் வரையிலான இலக்கிய, இலக்கணப் பனுவல்களை அறிமுகப்படுத்துவது, அதன் வளர்ச்சிப் போக்குகளையும் நோக்குகளையும் உணர்த்துதல், போட்டித் தேர்வுகளை எதிர்கொள்ளும் வகையில் உருவாக்குதல்.	போட்டித் தேர்வுகளை எதிர்கொள்ளல்.	national

Program Name: M.A.Tamil

Programme Out comes (POs) of M.A.,Tamil

முதுகலைப் பாடத் திட்டத்தின் வாயிலாக மாணவர்கள் கீழ்க்கண்ட திறன்களைப் பெற்றிருப்பர்.

PO1: தமிழில் ஆழ்ந்த புலமையினைப் பெற்றிருப்பர்.

PO2: தங்கள் பாடம் சார்ந்து திட்டமிடல், பகுப்பாய்தல், முடிவைத் தீர்மானித்தல் ஆகியவற்றைச் செயல்படுத்தும் தனித்திறன்களைப் பெற்றிருப்பர்.

PO3: ஆய்வேடு மற்றும் ஆராய்ச்சிச் செயல்பாடுகளின் வாயிலாகத் தங்களின் பாடத்தில் சிறந்த வல்லுநராக உருவாகின்ற தனித்திறன்களைப் பெற்றிருப்பர்.

PO4: படைப்பாளுமைகளாகப் பரிணமிக்கின்ற திறன்களைப் பெற்றிருப்பர்.

PO5: சமூக மற்றும் அறவிழுமியப் பொறுப்புள்ளவர்களாக மேம்படுகின்ற திறன்களைப் பெற்றிருப்பர்.

Program Specific Outcomes (PSOs) of M.A.,Tamil

முதுகலைப் பாடத் திட்டத்தின் வாயிலாக மாணவர்கள் கீழ்க்கண்ட திறன்களைப் பெற்றிருப்பர்.

PSO1: தமிழ்நாடு அரசுத் தேர்வாணையம், பல்கலைக்கழக மானியக் குழுப் போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்கான திறன்களைப் பெற்றிருப்பர்.

PSO2: கணினித் தமிழ், பயிற்சி பெறுவதன் மூலம் வேலை வாய்ப்பில் முன்னுரிமையும் தனியாகக் கணினிப் பயிற்சி மையம் வைத்து நடத்திடவும் பல ஆய்வேடுகளைத் தட்டச்சு செய்தும் தனித்தியங்கக்கூடிய திறன்களைப் பெற்றிருப்பர்.

PSO3: அறவிழுமிய உணர்வுள்ளவர்களாகவும் சமூகப் பொறுப்புள்ள குடிமகனாகவும் விளங்குகின்ற பண்பினைப் பெற்றிருப்பர்.

PSO4: மொழிபெயர்ப்பு நுட்பங்களை உணர்ந்து கொண்டு சிறந்த மொழிபெயர்ப்பினைச் செய்கின்ற திறன்களைப் பெற்றிருப்பர்.

PSO5: ஆய்வேடு மற்றும் ஆராய்ச்சிச் செயல்பாடுகளின் வாயிலாகத் தங்களின் பாடத்தில் சிறந்த ஆய்வாளராக உருவாகின்ற தனித்திறன்களைப் பெற்றிருப்பர்.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	தொல்காப்பியம் -எழுத்ததிகாரம்	TA718	தமிழ்த்துறை மாணவர்களுக்கு இலக்கண அறிவு தேவை என்பதை அறிந்து கொள்வர். எழுத்துகளின் வகைகள், பிறக்கும் முறை எப்படி என்பதை அறிந்து கொள்வர். புணர்ச்சி முறையின் அடிப்படைக் கட்டமைப்பினை அறிந்து கொள்வர். பிழையில்லாமல் எழுத முடியும் என்ற தன்னம்பிக்கையினைப் பெறுவார். ஆங்கிலத்திலிருந்து தமிழுக்கும் தமிழிலிருந்து ஆங்கிலத்திற்கும் உள்ள இலக்கண அமைப்பினைப்	தமிழ்த்துறை மாணவர்களுக்கு இலக்கண அறிவு தேவை என்பதை அறிந்து கொள்வர். எழுத்துகளின் வகைகள், பிறக்கும் முறை எப்படி என்பதை அறிந்து கொள்வர். புணர்ச்சி முறையின் அடிப்படைக் கட்டமைப்பினை அறிந்து கொள்வர். பிழையில்லாமல் எழுத முடியும் என்ற தன்னம்பிக்கையினைப் பெறுவார். ஆங்கிலத்திலிருந்து தமிழுக்கும் தமிழிலிருந்து ஆங்கிலத்திற்கும் உள்ள இலக்கண அமைப்பினைப்	national

				<p>பொறுத்திப் பார்க்கும் திறனைப் பெறுவர்.</p> <p>இலக்கணக் கோட்பாடுகளை விளங்கிக் கொள்வர்.</p> <p>எழுத்துகளின் கட்டமைப்பினைத் தெரிந்துகொண்டு சிறப்பான பிழையில்லாத தொடர்களை அமைக்கும் திறன்களைப் பெற்றிருப்பர்.</p>	
2	கவிதை, சிறுகதை	TA720	<p>கவிதை, சிறுகதை ஆகிய இலக்கிய வகைமைகளின் வரலாற்று அறிவைப் பெறுதல்.</p> <p>நூறு ஆண்டுகாலத்தில் தமிழகப் புதுக்கவிதைகளில் ஏற்பட்டுள்ள வளர்ச்சி, கருத்தியல் வளர்ச்சி ஆகிய அறிவையும் கவிதைகளை எழுதும் மற்றும் வாசிக்கும் அறிவையும் திறனையும் பெறுதல். மேலும் மொழி,</p>	<p>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</p>	global

			<p>நிலம், பண்பாடு, பாலினம் சார்ந்து சிறுகதைகளை ஒப்பிட்டுப் பார்க்கும் ஒப்பீட்டு அறிவையும் பெறுதல்.</p>	<p>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 அறிவையும் திறனையும் பெறுதல். கவிதை, சிறுகதைகளைத் திறனாய்வு செய்யும் அறிவினையும் வாசிப்புத் திறனையும் பெறுதல். இலக்கியத்திற்குள் செயல்படும் மொழி, உளவியல் முதலான பல்வேறு கோட்பாட்டு அறிவினைக் கொண்டு இலக்கியத்தை அணுகும்</p>	
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3	இக்கால மொழியியல்	TA721	தமிழ் மொழியியல் 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 - ஒசை இயல்புகள் பற்றி அறிந்துகொள்வர். ஒலியனியல் - ஒலியன் - மாற்றொலி - துணைநிலை வழக்கு வேற்றுநிலை வழக்கு குறித்த சொய்திகளை அறிந்துகொள்வர். உருபனியல் - உருபு - உருபன் - மாற்றுருபு உருபனைக் கண்டறியும் நடைன் விதிகள் குறித்த சொய்திகளை அறிந்துகொள்வர்.	global

				உருபங்களின் வகையும் வருகையும் தொடரணியல் அறிமுகம் - அண்மை உறுப்புக் கோட்பாடு - மூவகைத் தொடரணியல் குறித்த சொய்திகளை அறிந்துகொள்வர்.	
4	njhy;fhg;gpak; - nrhy;yjpfhuk	TA819	njhy;fhg;gpak; khztHfSf;F nrhw;gpio ,y;yhky; vOJtjw;Fk; thrpg;gjw;Fk; Njit vd;gijmwpe;J nfhs;th. cyfkakhf;fr; #oypy; jkpo;nkhopapd; tsh;r;rpf;fhf nkhopawpTld; ,yf;fzk; mbg;gilj;Njit vd;gij mwpe;J nfhs;th;. jkpo;nkhopapd; mbg;gilf;fl;likg;gpid mwpe;J nfhs;th;.	jkpo;nkhopapidg; gpioapd;wp vOjTk; NgrTk; KbAk; vd;w jd;dk;gpf;ifapidg; ngWtH. jd;jpwikfis tsh;g;gNjhL kl;Lky;yhky; Ngr;rhsh; vd;w jpwidg; ngWth;. ,yf;fzf;nfhs;iffis tpsq;fpf; nfhs;th;. ,yf;fzEl;gq;fis czh;e;Jnfhz;L rpwe;j vOj;jhsh; Ngr;rhsh; vd;w jpwd;fisg; ngw;wpUg;gH.	national
5	காப்பியங்கள்	TA820	தமிழ் மொழியில் உள்ள காப்பியங்கள் குறித்தும் அவற்றின் உறவுகள் குறித்தும் அறிந்துகொள்வது. அவற்றின் வழியாக அக்கால மக்களின் சமூக	தமிழின் காப்பிய இலக்கணம் குறித்து அறிந்துகொள்ளுதல் மற்றும் முதல் காப்பியமான சிலப்பதிகாரம் குறித்து அறிந்துகொள்வர். மணிமேகலை மற்றும் சீவகச்சிந்தாமணி காப்பிய	global

			<p>அரசியல் பொருளாதார பின்புலம் முதலியன குறித்து அறிந்துகொள்வது.</p>	<p>அறிமுகம் மற்றும் சமண பௌத்த சமயங்கள் பற்றிய அறிந்துகொள்வர். நீலகேசி மற்றும் பெருங்கதை குறித்த சொய்திகளை அறிந்துகொள்வர். கம்பராமாயணம், வில்லிபாரதம் அறிமுகம் மற்றும் வைணவச் சமயம் குறித்த சொய்திகளை அறிந்துகொள்வர். இரட்சணிய யாத்திரிகம், தேம்பாவணி அறிமுகம் மற்றும் கிருத்துவ, இசுலாம் சமயங்கள் குறித்த சொய்திகளை அறிந்துகொள்வர்.</p>	
6	புதினம் & உரைநடை	TA821	<p>உரைநடை எழுதும் கலையினை அறிந்து கொள்வர் படைப்பிலக்கியத்தின் மீதான் ஆர்வத்தையும் வாசிப்பையும்</p>	<p>உரைநடை எழுதும் கலையினை அறிந்து கொள்வர் படைப்பிலக்கியத்தின் மீதான் ஆர்வத்தையும் வாசிப்பையும் வளர்த்துக் கொள்வர்</p>	global

			<p>வளர்த்துக் கொள்வர் தொடர் வாசிப்பின் மூலம் சமூகப் பிரச்சனைகளுக்குத் தீர்வு காணும் ஆற்றல் பெறுவர் அரசியல் , சமூகம் சார்ந்த சமீப கால மாற்றங்களை புரிந்து கொள்வர்</p>	<p>தொடர் வாசிப்பின் மூலம் சமூகப் பிரச்சனைகளுக்குத் தீர்வு காணும் ஆற்றல் பெறுவர் அரசியல் , சமூகம் சார்ந்த சமீப கால மாற்றங்களை புரிந்து கொள்வர் புதினங்களின் வரலாறு குறித்தும் , வளர்ச்சி குறித்தும் அறிந்து கொள்வர். புதினங்களை வடிவமைக்கும் திறனைப் பெறுவர். புதினம் சார்ந்த ஆய்வுகளை மேற்கொள்ளும் திறன் பெறுவர்.</p>	
7	இலக்கியக் கோட்பாடுகள்	TA822	<p>இலக்கியக் கோட்பாடு – இலக்கியத் திறனாய்வு – இலக்கிய வரலாறு – இலக்கியம் ஆகியவற்றின் தனித்தன்மைகளையும் உறவுநிலைகளையும் குறித்த அறிவைப் பெறுதல் மொழியியல், ஒப்பியல்,</p>	<p>உளப்பகுப்பாய்வியல், தொன்மவியல், அமைப்பியல், பின் அமைப்பியல் ஆகிய திறனாய்வு முறைகளின் அறிவைப் பெறுதல் பின் நவீனத்துவம், பின் காலனித்துவம், எடுத்துரைப்பியல், புலம்பெயர்</p>	global

			சமூகவியல், பெண்ணியியல், தலித்தியல் ஆகிய திறனாய்வு முறைகளின் அறிவைப் பெறுதல்	இலக்கியத் திறனாய்வு, சூழலியல் ஆகிய திறனாய்வு முறைகளின் அறிவைப் பெறுதல் ஆய்வு மாதிரிகள் குறித்த அறிவையும் பயிற்சியும் பெறுதல்	
8	படைப்பிலக்கிய மும் ஆளுமைத்திறனும்	TA823	படைப்பாளி – படைப்பாக்கம் – படைப்பு ஆகியவற்றின் உறவுநிலை சார்ந்த அறிவைப் பெறுதல் நவீனப் படைப்புகளின் இயங்குதள விதிகள் குறித்த அறிவைப் பெறுதல் ஆளுமைப் பண்புசார் அறிவைப் பெறுதல்	படைப்பாளி – படைப்பாக்கம் – படைப்பு ஆகியவற்றின் உறவுநிலை சார்ந்த அறிவைப் பெறுதல் நவீனப் படைப்புகளின் இயங்குதள விதிகள் குறித்த அறிவைப் பெறுதல் ஆளுமைப் பண்புசார் அறிவைப் பெறுதல் ஆளுமைப்பண்புகளை மேம்படுத்தும் அறிவைப் பெறுதல் ஆளுமைகளின் பயிற்சியையும் படைப்பாக்கப் பயிற்சியையும் பெறுதல்	national

9	தொல்காப்பியப் பொருளதிகாரம்	TA918	<p>தமிழ் மொழியில் உள்ள தொல்காப்பியபொருளதிகாரம் குறித்தும் அவற்றின் தமிழ்மொழியின் இலக்கணநூலான தொல்காப்பியத்தில் பொருளதிகாரத்தின் அக்கால மக்களின் அகப்புற வாழ்வியலை அறிந்துக் கொள்வது</p>	<p>பழந்தமிழரின் அகவாழ்வியலுக்கான இலக்கணத்தை அறிந்துகொள்வர். பழந்தமிழரின் புற வாழ்வியலுக்கான இலக்கணத்தை அறிந்துகொள்வர். களவு - களவுக்கான கூற்று நிகழ்த்துபவர்களின் இலக்கணத்தை அறிந்துகொள்வர். கற்பு - கற்குக்கான கூற்று நிகழ்த்துபவர்களின் இலக்கணத்தை அறிந்துகொள்வர். களவு, கற்பியலில் சொல்லப்படாத எஞ்சியுள்ள இலக்கணச் செய்திகளை பொருளியலில் அறிந்துகொள்வர்.</p>	national
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10	உரை மரபுகள்	TA920	<p>உரைமரபின் தோற்றப் பின்புலங்களை அறிந்துகொள்ளல்- உரையாசிரியர்களின் உரைப்போக்கினை விளங்கிக் கொள்ளல்- இலக்கண, இலக்கிய உரையாசிரியர்களின் உரை வேறுபாட்டினை உணர்ந்துக்கொள்ளல்.</p>	<p>இலக்கண உரையாசிரியர்களின் வரலாறு, இலக்கண நூல்களுக்கு உரை எழுதும் தன்மைக் குறித்த அறிவைப் பெறுதல். தமிழ் இலக்கியங்களுக்கு உரையெழுதுபோக்குக் குறித்தத் திறனைப் பெறுதல். நீதிநூல்களுல் ஒன்றான திருக்குறளுக்கு வரைந்துள்ள உரைப்போக்கு, சிந்தனைகள் குறித்தும் நன்கு தெளிந்த அறிவையும் பெறுதல்.</p>	national
11	போட்டித்தேர்வு களுக்கான தமிழ்	TA1023	<p>உலகமயமாக்கச் சூழலில் தமிழ் மொழியறிவும் அடிப்படைத் தேவை என்பதை அறிந்து கொள்வர். தமிழ் இலக்கண மொழியின் கட்டமைப்பினை அறிந்து கொள்வர். தமிழ் மொழியில் உள்ள</p>	<p>போட்டித்தேர்வு நோக்கில் இலக்கியம் பெற்றிருப்பர். உலகமயமாக்கச் சூழலில் தமிழ் மொழியறிவும் அடிப்படைத் தேவை என்பதை அறிந்து கொள்வர். தமிழ் இலக்கண மொழியின் கட்டமைப்பினை அறிந்து</p>	national

			<p>இலக்கியத்தின் முக்கியத்துவத்தினை அறிந்து கொள்வர்..</p>	<p>கொள்வர். தமிழ் மொழியில் உள்ள இலக்கியத்தின் முக்கியத்துவத்தினை அறிந்து கொள்வர்.. வினாவிற்கு ஏற்ற விடையையும் விடைக்கு ஏற்ற வினாவினையும் அமைக்க கற்றிருப்பர். போட்டித்தேர்வு கொள்கைகளை விளங்கிக் கொள்வர். தேர்வு நுட்பங்களை உணர்ந்து கொண்டு தேர்வு எழுதும் திறன்களைப் பெற்றிருப்பர்.</p>	
12	<p>தொல்காப்பியம் பொருளதிகாரம் - 2</p>	TA1019	<p>தமிழ் மொழியில் உள்ள பொருளிலக்கணம் குறித்தும் அவற்றின் வளர்ச்சி நிலை குறித்தும் அறிந்துகொள்வது. அவற்றின் வழியாக மக்களின் வாழ்வியல் முறைகளையும் செய்யுள்</p>	<p>தமிழரின் அக வாழ்வியல் குறித்தும் அவ்வாழ்வியல் குறித்த படைப்புகளுக்கான மெய்ப்பாட்டு இலக்கணம் குறித்து அறிந்துகொள்ளுதல். செய்யுளுக்கு அழகு சேர்க்கும் அணி இலக்கணத்தைக் குறிப்பாக உவமையியல்</p>	national

			<p>புனையும் ஆற்றல் குறித்தும் அறிந்துகொள்வது</p>	<p>குறித்து அறிந்துகொள்ளுதல். கவிதை இயற்றுவதற்கான இலக்கணம் குறித்தும், அக்கவிதை கட்டமைப்புக்கான இலக்கணத்தையும் அறிந்துகொள்ளுதல். செய்யுள் இயற்றுதலுக்கு வரையரைசெய்யப்பட்ட செய்யுள் உத்திகளை அறிந்துகொள்ளுதல். தொல்காப்பியர் உணர்த்திய மரபியல் சிந்தனைகளை அறிந்துகொள்வர்.</p>	
13	gf;jpapyf;fpaq;fSk; nka;apay; kuGk;	TA1020	<p>gf;jpapyf;fpaq;fspd; top nkhopj;Jiw khztHfSf;Fg; gpw rka mwpT Njit vd;gij mwpe;J nfhs;tH. cyfkakhf;fr; #oypy; gf;jpapyf;fpaj;jpd; mwr;nra;jpfspd; Kj;d;ik Fwpj;J mwpa nkhopawpT mbg;gilj; Njit vd;gij mwpe;J nfhs;th;. nka;apay;kugpd; thapyhf gy;NtW rkaq;fspd; mbg;gilf; fl;likg;gpid mwpe;J nfhs;th;.</p>	<p>gf;jpapyf;fpaj;jpd; KOikiag; Ghpe;J nfhs;tjd; epiuthf Ngr;rhsH vd;w jd;dk;gpf;ifapidg; ngWtH. rkak;rhHe;j Gj;jfq;fs; vOJtjw;Fk; Muha;r;rpf; fl;Liufs; newpg;gLj;Jtjw;Fk; fUj;juq;fk; elj;Jtjw;Fkhd ce;Jjiyg; ngWtH. rkanewpKiwf; nfhs;iffis tpsq;fpf; nfhs;tH. rka newpKiwapd; El;gq;fis czHe;Jnfhz;L rpwe;j Muha;r;rpapidr; nra;fpd;w jpwd;fisg; ngw;wpUg;gH.</p>	global

14	தமிழக வரலாறும் மக்களும் பண்பாடும்	TA1021	<ul style="list-style-type: none"> • jkpo;r; r%f tuyhw;iwAk; gz;ghl;L tuyhw;iwAk; mwpKfg;gLj;Jjy; - • gz;ghl;Lr; rpwg;gpd; jdpj;Jtj;ij mwpKfk; nra;jy; - tuyhw;wpd; Nghf;fpidAk; ,ilaPLfisAk; ,ila+WfisAk; njspTgLj;Jjy;. 	<p>தமிழக பண்பாடு தேவை என்பதை அறிந்து கொள்வர்.</p> <p>தமிழர் வரலாறு அடிப்படைத் தேவை என்பதை அறிந்து கொள்வர்.</p> <p>தமிழக பண்பாடு அடிப்படைக் கட்டமைப்பினை அறிந்து கொள்வர்.</p> <p>பண்பாட்டு என்ற தன்னம்பிக்கையினைப் பெறுவர்.</p> <p>தமிழ் பண்பாடு திறனைப் பெறுவர்.</p> <p>தமிழ் பண்பாட்டு கொள்கைகளை விளங்கிக் கொள்வர்.</p> <p>பண்பாட்டு நுட்பங்களை உணர்ந்து கொண்டு சிறந்த வரலாறு திறன்களைப் பெற்றிருப்பர்.</p>	national
15	ஒப்பிலக்கியம்	TA1021	ஒப்பிலக்கியக் கோட்பாடுகளையும்	ஒப்பிலக்கியத்திற்கான அறிமுகம் மற்றும் இலக்கிய	global

			<p>பயன்பாடுகளையும் அறிந்துகொள்ளல்- தமிழ்நாடு, இந்திய, உலக அளவிலான இலக்கியங்களுக்கிடையிலான உறவுகளை எடுத்துரைத்தல். தமிழுக்கும் பிற இலக்கியங்களுக்குமான பொது, சிறப்புக்கூறுகளை எடுத்துரைத்தல்.</p>	<p>வகைமைகளுக்கான பொதுக்கூறுகள், சிறப்புக்கூறுகள், அவற்றிற்கான பயன்பாடுகள் குறித்த அறிவைப் பெறுதல். ஒப்பிலக்கியத்திற்கான தோற்றம், வளர்ச்சி தமிழ்நாடு, இந்தியா, உலக நாடுகளின் அளவில் எங்ஙனம் என்பது குறித்த அறிவைப் பெறுதல். ஒப்பிலக்கியத்தின் மூலம் சில கோட்பாடுகளான அறிவியல் கோட்பாடு, பிரெஞ்சு கோட்பாடு, சமூக உளவியல் கோட்பாடு, அரசியல், தாக்குரவு கோட்பாடுகள் குறித்த அறிவைப்பெறுதல்.</p>	
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Program Name B.Sc. BIOCHEMISTRY

PROGRAMME OUTCOMES AT UNDERGRADUATE LEVEL

Undergraduates will be able to:

- PO1: Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment
- PO2: Pursue higher learning programmes and become entrepreneurs
- PO3: Recognize moral and ethical values and be socially responsible citizens in the society
- PO4: Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
- PO5: Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings
- PO6: Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
- PO7: Demonstrate communication skills both oral and written in personal and academic pursuits.

PROGRAMME SPECIFIC OUTCOMES [PSO]

- PS01:** Disciplinary knowledge and understanding of Biochemistry, structure and function of biological molecules and explain biological mechanisms, such as the processes and control of bioenergetics and metabolism, as chemical reactions.
- PS02:** Explain the biochemical processes that underlie the relationship between genotype and phenotype and demonstrate an experiential learning and critical thinking of the structure and function of both prokaryotic and eukaryotic cells (including the molecular basis and role of sub-cellular compartmentalization).
- PS03:** Demonstrate an understanding of the principles, and have practical experience of a wide range of biochemical techniques (e.g. basic molecular biology, cell biology and microbiology methods, spectrophotometry, the use of standards for quantification, enzyme kinetics; macromolecular purification, chromatography electrophoresis, etc.).
- PS03:** Analyze biochemical data (e.g. in enzyme kinetics, molecular structure analysis and biological databases and carry out laboratory-orientated numerical calculations (e.g. inter-conversion of masses, moles, and molarity, preparation of solutions and accurate dilutions), be capable in data visualization and analysis, including the application of data transformations (e.g. logarithmic, exponential).
- PS04:** Basic professional skills pertaining to biochemical analysis, carrying out clinical diagnostic tests and ability to use skills in specific areas related to Biochemistry such as industrial production, technology development, clinical, health, agriculture, community development, etc.
- PS05:** Curiosity and ability to formulate Biochemistry related problems and using appropriate concepts and methods to solve them and ability to use various e-resources in order to solve challenges related to Biochemistry.
- PS06:** Articulation of ideas, scientific writing and authentic reporting, effective presentation skills and having conversational competence including communication and effective interaction with others, listening, speaking, and observational skills.

PS07: Collaboration, cooperation and realizing the power of groups and community, ability to work in a group, community and ability to grasp ideas and to turn ideas into action related to biochemical mechanisms and processes related to industries, industrial production, health, agriculture, etc.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	CELL BIOLOGY	BC106	<ul style="list-style-type: none"> • 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 mechanisms. 	<ul style="list-style-type: none"> • 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

2	BIOMOLECULES	BC107	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	Global developmental needs

			<p>secondary metabolites.</p> <ul style="list-style-type: none"> To explore the information about plant hormones and their physiological effects. 	<ul style="list-style-type: none"> Explore the information about plant hormones and their physiological effects. Assess the in-depth principle and speculate the mechanism of plant life cycle 	
4	HUMAN PHYSIOLOGY	BC207	<ul style="list-style-type: none"> To understand the anatomy and physiology, various levels of organizations basic homeostatic 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- 	<ul style="list-style-type: none"> Define and explain the anatomy and physiology, various levels of organizations basic homeostatic 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- 	Global developmental needs

			ordination with the joints, their articulation and skin.	ordination with the joints, their articulation and skin.	
5	MICROBIOLOGY	BC304	<ul style="list-style-type: none"> To understand basic structure of microbes and associated instruments. 	<ul style="list-style-type: none"> 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 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. 	Global developmental needs
6	BIOPHYSICAL CHEMISTRY	BC305	<ul style="list-style-type: none"> To understand about basic biophysical units and its chemistry 	<ul style="list-style-type: none"> 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 	Global developmental needs

				<p>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.</p>	
7	APPLIED MICROBIOLOGY	BC404	<ul style="list-style-type: none"> To understand about mode of microbial infections, fermentation and waste management. 	<ul style="list-style-type: none"> 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 using both oral and written. Students can demonstrate an understanding, and ability to use, the scientific method including observation, hypotheses testing, 	National developmental needs

				data collection, analysis and interpretation.	
8	ANALYTICAL BIOCHEMISTRY	BC405	<ul style="list-style-type: none"> To understand about principles, instrumentation and applications of various analytical instruments. 	<ul style="list-style-type: none"> Analytical biochemistry expertise the student in analyzing biochemical components found in a cell or other biological sample. It also makes the student skilled in using broad range of techniques for separation, identification, quantification and functional characterization of biological molecules. It also ensures the student to understand the insights of complex biological process in the cell. This course will develop basic knowledge on electrochemical techniques, chromatography, electrochemical radiation and atomic radiation techniques used in life science. 	National developmental needs
9	ENZYMOLGY	BC516	<ul style="list-style-type: none"> To understand the role of enzymes in biochemical reactions and its applications. 	<ul style="list-style-type: none"> 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, 	Global developmental needs

				<p>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 applying enzyme technology for the commercialization purpose of biotechnological products.</p>	
10	INTERMEDIATORY METABOLISM	BC517	<ul style="list-style-type: none"> To promote and understand chemical reactions, central metabolic pathways and kinetics of energy and homeostasis of metabolism 	<ul style="list-style-type: none"> 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
11	ENDOCRINOLOGY	BC518	<ul style="list-style-type: none"> To understand the role of hormones in biochemical reactions and its applications. 	<ul style="list-style-type: none"> Students will develop the ability to independently evaluate, treat and monitor common 	Global developmental needs

				<p>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.</p>	
12	GENETICS	BC519	<ul style="list-style-type: none"> To understand basic aspects of genetics and associated laws. 	<ul style="list-style-type: none"> 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, heritability 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

13	BIOMEDICAL INSTRUMENTATION	BC520A	<ul style="list-style-type: none"> To focus on biomedical instrumentation in life sciences. 	<ul style="list-style-type: none"> The main objective of this course is to introduce student to basic biomedical engineering technology. As a result student can understand, design and evaluate systems and devices that can measure, test and/or acquire biological information from the human body. This course will explore the students about various systems of the human physiology, signals of biological origin obtained from these systems, biosensors, transducers, bioelectrodes used to acquire such signals, and amplifiers for measuring biopotentials. Electrical safety of medical devices; measurements of the blood pressure, blood flow, respiratory system, clinical laboratory equipment, medical imaging, and bioethics will also be discussed. 	National developmental needs
14	MEDICAL LABORATORY TECHNOLOGY	BC520B	<ul style="list-style-type: none"> To give knowledge about laboratory practices, drugs and cancer chemotherapy. 	<ul style="list-style-type: none"> The student will be able to Perform routine clinical laboratory procedures within acceptable quality control parameters in Hematology, Chemistry, 	Local developmental needs

				<p>Immunohematology, and Microbiology under the general supervision of a Clinical Laboratory Scientist or Pathologist. Demonstrate technical skills, social behavior, and professional awareness incumbent upon a laboratory technician as defined by the American Society for Clinical Laboratory Science and the American Society of Clinical Pathologists.</p>	
15	PHARMACOLOGY	BC520C	<ul style="list-style-type: none"> To give focus on drug chemistry and its mechanism of actions. 	<ul style="list-style-type: none"> This course will provide the basic information on drug, drug metabolism, adverse drug reactions, general awareness of different types of drugs and its effects. This course will also give focus on drug chemistry and its relationship in life sciences 	Regional developmental needs
16	SSP-I: HEALTH MANAGEMENT	BC522SP1	<ul style="list-style-type: none"> To gain knowledge about first aid, basic health issues and handling emergencies. 	<ul style="list-style-type: none"> This course will provide the basic information about safe guards to health, first aid for accidents, handling emergencies of general and specific disease. This course will also give awareness about symptoms and giving first aid during common health issues before meeting the physician. 	Local developmental needs

17	NON-MAJOR ELECTIVE: ENERGY BUILDERS	NBC503	<ul style="list-style-type: none"> To understand about various biological macromolecules and its function (structures not required) 	<ul style="list-style-type: none"> A student draws complete knowledge of health management at the end of this course. Based on an individual's requirement a complete diet schedule can be framed by the student. 	Regional developmental needs
18	MOLECULAR BIOLOGY	BC613	<ul style="list-style-type: none"> To give basic aspects of molecular theories and central dogma. 	<ul style="list-style-type: none"> 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
19	IMMUNOLOGY	BC614	<ul style="list-style-type: none"> To know about exact mechanism of action of Ag-Ab interaction. 	<ul style="list-style-type: none"> 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 germane to advanced courses for the student entering medical school or graduate school or for any student actively involved in the medical healing arts. 	Global developmental needs

20	MEDICAL BIOCHEMISTRY	BC615	<ul style="list-style-type: none"> To understand in details about diseases, associated symptoms and treatments. 	<ul style="list-style-type: none"> This course will provide the basic knowledge on principles and practices of Clinical laboratory, collection of clinical specimens based on the disease, understand the clinical disorders and treatments. It also imparts knowledge about exact clinical condition, causative agents, signs & symptoms, diagnosis, and treatment measures of diseases affecting principal organs 	Regional developmental needs
21	SS1: BIOTECHNOLOGY	BC616	<ul style="list-style-type: none"> To give knowledge on applied field of life sciences like DNA technology, tissue culture techniques and Fermentation technology 	<ul style="list-style-type: none"> Student will have a In-depth knowledge in the chemical structure and function of biomolecules, metabolism in the cell, knowledge of the concepts of molecular genetics and biosynthesis of proteins. A good theoretical and practical insight into methods used to obtain this knowledge of the relationship between structure and function at organ and/or organism level, of important cell biological communication principles and processes, and how they are regulated. 	National developmental needs

22	SS2: BIOETHICS	BC617	<ul style="list-style-type: none"> To understand the ethical aspects in Biology and Bio Containment. 	<ul style="list-style-type: none"> This self-study paper makes the student to acquire sound knowledge about different types of nutrients and its composition. Based on the symptoms of the disease in the early stage one can cure the disease through diet therapy. This student can chart out a recommended diet for particular disease. By strictly following the diet one can get rid of the discomfort. 	Local developmental needs
23	SSP-II: NUTRITIONAL BIOCHEMISTRY	BC619SP1	<ul style="list-style-type: none"> To know about importance of Nutrition and associated health risks. 	<ul style="list-style-type: none"> This self-study paper makes the student to acquire sound knowledge about different types of nutrients and its composition. Based on the symptoms of the disease in the early stage one can cure the disease through diet therapy. This student can chart out a recommended diet for particular disease. By strictly following the diet one can get rid of the discomfort. 	Local developmental needs
24	HEALTH CARE AND DISEASE MANAGEMENT	NBC603	<ul style="list-style-type: none"> To give awareness about first aid, basic health issues, handling emergencies. 	<ul style="list-style-type: none"> A student draws complete knowledge of health management at the end of this course. Based on an individual's requirement a complete diet schedule can be 	Local developmental needs

				framed by the student.	
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Program name M.Sc. BIOCHEMISTRY

Postgraduates will be able to:

- PO1: Demonstrate intense knowledge in their discipline
- PO2: Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
- PO3: Develop expertise in their field of study through projects and research activities
- PO4: Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
- PO5: Develop social and ethical responsibility in the transfer and management of knowledge

PROGRAMME SPECIFIC OUTCOMES [PSO]

PSO-1: After completion of the program the students are well poised to pursue careers in academic and industry in the areas of pharmaceutical and biotechnology and Health care professionals for services in the fields of clinical biochemistry, laboratory management, hospital and community services.

PSO-2: The students will be able to demonstrate practical skills in handling biological specimens, analysis and their safe disposal.

PSO-3: Communicate the fundamental concepts of specific molecules, enzymes, cells, organ systems and metabolism of compounds.

PSO-4: Apply the knowledge and expertise in industries, diagnostic laboratories and various research fields.

PSO-5: Impart practical skills and scientific knowledge in domains of Molecular biology, enzymology, genetics, clinical biology and immunology.

PSO-6: Develop problem solving ability by utilizing the conceptual knowledge, analytical techniques, computational and statistical approaches.

PSO-7: Facilitate to pursue higher education in related fields in life sciences and contribute their knowledge to the betterment of the society in various research and health care sectors.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	CELL DYNAMICS	BC709	<ul style="list-style-type: none"> • 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 necrosis 	<ul style="list-style-type: none"> • 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 the concept and mechanism of ATP synthesis. • Compile the information on cell aging 	Global developmental needs

				and cell death mechanisms.	
2	BIOMOLECULES	BC710	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
3	HUMAN PHYSIOLOGY AND NUTRITION	BC711	<ul style="list-style-type: none"> • To understand the composition and functions of Blood and 	<ul style="list-style-type: none"> • Describe the structure of major human organs and explain their role in the maintenance of healthy individuals. 	Global developmental needs

			<p>Plasma.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	
4	ELECTIVE – I – BIOINFORMATICS	BC712A	<ul style="list-style-type: none"> • To give focus on online resources in life sciences and applications of Bioinformatics in scientific research. • To determine the function of genes and proteins, to establish evolutionary relationships, and to calculate the three-dimensional shape of proteins by using computer programs. • To learn algorithms and statistics for assessing the relationships among large 	<ul style="list-style-type: none"> • Understand the history and basic concepts in bioinformatics. • Determine the formative databases available for all the biological macromolecules. • Analyze global and local sequence alignment tools and their importance. • List the various protein structure prediction methods through computational approaches. • Integrate the significance of gene prediction methods. • Evaluate the tools and software in the 	National developmental needs

			<p>sets of biological data.</p> <ul style="list-style-type: none"> • To know the tools for the analysis and interpretation of the various biological data. • To understand various databases and learn the useful biological information. 	analysis of nucleic acid and protein.	
5	INDUSTRIAL MICROBIOLOGY	BC712B	<ul style="list-style-type: none"> • To learn about the basic concepts of industrial microbiology and industrially important microbes. • To understand the microbial fermentation process, fermenters types and fermentation techniques. • To gain the knowledge about inoculum development, raw materials used in fermentation process. • To become familiar with the food preservation techniques and fermented dairy, brewers products. • To understand the food preservation techniques and uses of microbes in waste management. 	<ul style="list-style-type: none"> • Identify the different types of fermenters and explain the various fermentation strategies and the growth of industrial microorganisms. • Explain the inoculum development methods, various types of raw materials used in fermentation process and scale up process of fermentation • Manipulate the fermentation media, microbial inoculum and strain for different types of microbial fermentation process. • Categorize the primary and secondary metabolites production techniques and Describe about industrially important microbes. • Evaluate the various food preservation methods and identify the fermented dairy, baker's and brewing products. • Propose a waste management system, 	Regional developmental needs

				design new composting technique and biogas unit.	
6	STEM CELL TECHNOLOGY	BC712C	<ul style="list-style-type: none"> To learn about the basics of stem cells. To understand the embryonic and adult stem cell therapy. To examine the increasing potential of stem cell in medicine and understanding of the molecular determinants. To develop the ability to understand the role of stem cells in research. To learn about Stem cell based therapies in animal models. 	<ul style="list-style-type: none"> Enumerate the basics of stem cells and the concepts of embryonic and adult stem cell therapy. Examine the increasing potential of stem cell science to contribute to medicine and understanding of the molecular determinants that define stem cells. Demonstrate in vitro manipulation to create distinct cell lineages and understanding of the methodologies used for reverse engineering of mature cells to create induced pluripotent stem cells. Compile the basic research methodologies used in current stem cell research. Determine the ethical issues associated with stem cell research. Defend the stem cell based therapies in animal models. 	National developmental needs
7	INSTRUMENTATION BIOCHEMISTRY	BC809	<ul style="list-style-type: none"> To study the principle, procedure and applications of electrophoresis. To understand the 	<ul style="list-style-type: none"> Understand the core concepts of all analytical techniques Describe the basic principle, types, procedure and applications of electrophoresis 	Regional developmental needs

			<p>principle, procedure and applications of microscopes.</p> <ul style="list-style-type: none"> • To study the principle, procedure and applications of chromatography. • To learn the principle, procedure and applications of centrifugation techniques. • To know the principle, procedure and applications of spectrophotometry 	<ul style="list-style-type: none"> • Acquire knowledge about advanced microscopy techniques • Correlate the various types of chromatographic techniques • Justify the principle, instrumentation and applications of various spectroscopy techniques • Schematize the Principle and applications of Atomic flame and flameless spectrophotometry 	
8	ADVANCED ENZYMOLOGY	BC810	<ul style="list-style-type: none"> • 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. • To learn the kinetics of enzyme catalyzed reactions and enzyme inhibitory and regulatory process. 	<ul style="list-style-type: none"> • 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 • Determine the applications of enzymes and their future potential 	Global developmental needs

			<ul style="list-style-type: none"> To understand the role of enzymes in clinical diagnosis and industries 		
9	INTERMEDIARY METABOLISM	BC811	<ul style="list-style-type: none"> 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 and redox balance. To gain insights into metabolic engineering for the production of useful biomolecules. 	<ul style="list-style-type: none"> 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 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 	Global developmental needs

				<p>occurring in the cells.</p> <ul style="list-style-type: none"> Integrate how metabolism can be related with issues in lifestyle, health and disease 	
10	ELECTIVE II - ADVANCED ENDOCRINOLOGY	BC812A	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
11	ELECTIVE – II – PHARMACEUTICAL BIOCHEMISTRY	BC812B	<ul style="list-style-type: none"> To gain the knowledge on basic concepts of pharmacology to understand the mechanisms of drug action and toxicity. To understand the chemistry of drugs with respect to their pharmacological activity. To learn the drug 	<ul style="list-style-type: none"> Enumerate the relevance, basic concepts of pharmacology, ADME properties and drug metabolism Interpret the pharmacological actions of different categories of drugs and factor that modifies the effect of drug and drug potency Apply the basic principle of genetic engineering and enzyme technology Outline the mechanism of action of 	Regional developmental needs

			<p>metabolic pathways, adverse effect and therapeutic value of drugs.</p> <ul style="list-style-type: none"> • To know the mechanism of action of drug therapy. • To study about the natural drug development. 	<p>drugs used in therapy of Respiratory system.</p> <ul style="list-style-type: none"> • Perceive the information of drugs used for cancer, inflammation, respiratory system, GIT, immune system and hormones. • Formulate natural products for chemotherapy, anti-hypertensive, anti-platelet, anti-inflammatory and anti-cholinergic drugs. 	
12	ELECTIVE II - ENVIRONMENTAL TOXICOLOGY	BC812C	<ul style="list-style-type: none"> • To gain knowledge on toxic substances and biochemical basis of toxicity. • To understand the sources and routes of the various toxic substances in the environment. • To learn about environmental impacts of pesticides and xenobiotics. • To study about the toxicity testing and their interpretations. • To understand the causes of organ toxicity. 	<ul style="list-style-type: none"> • Demonstrate the degradable and non-degradable toxic substances and action mechanism of toxicity. • Define the transport of toxins by air, water and food chain; explain the combined effect of xenobiotics. • Determine the environmental impacts of various pesticides and effect of xenobiotics on aquatic organisms. • Outline the legal, regulatory and ethical considerations relating to toxicity within the broader societal context. • Find the lethal concentration and lethal dose of toxic substances by toxicity testing. • Compile the causes of hepatotoxicity, nephrotoxicity, pulmonary toxicity and 	Local developmental needs

				neurotoxicity.	
13	MOLECULAR BIOLOGY	BC911	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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

14	IMMUNOLOGY	BC912	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
15	RESEARCH METHODOLOGY	BC913	<ul style="list-style-type: none"> • To learn the Importance of Research and Ethics in Scientific research • To understand the collection and classification of research data. 	<ul style="list-style-type: none"> • Observe the basic concepts of scientific research, types of research and research design. • Establish the knowledge about scientific writing and research publications • Generalise the Collection and 	National developmental needs

			<ul style="list-style-type: none"> • To know the scope of Bioinformatics, the role of Computers in Biology and Useful search engines. • To acquire in-depth knowledge about the Laboratory animals used for Life science research. • To explain the Composition of the Institutional Ethical Committee (IEC) and General ethical issues. 	<p>Classification of Data and its analysis.</p> <ul style="list-style-type: none"> • Perceive the Scope of Bioinformatics, and useful search engines for finding scientific articles. • Point out the Laboratory animals used for Life science research and its ethical issues. • Develop an understanding of the Composition of the Institutional Ethical Committee (IEC), IPR and Patenting. 	
16	ELECTIVE III- ECOLOGY, EVOLUTION AND BIODIVERSITY	BC914A	<ul style="list-style-type: none"> • To learn the fundamental principles of evolutionary theory to explore the evolution of biodiversity. • To make familiar with the major groups of organisms related to one another. • To learn the basic ecological theory and proposing solutions to the major environmental problems. • To understand the concepts of genetic variation, Mendelian genetics and recombination. 	<ul style="list-style-type: none"> • Provide in-depth knowledge about emergency of evolutionary thoughts and Darwin concepts. • Review the origin of cell, unicellular evolution, Abiotic synthesis and prokaryotic evolution. • Analyze the population genetics with various types of selection like sexual selection, gene drift and gene flow. • Establish the ecological interaction between an organism and environment. • Manage the ecosystem dynamics, stability and complexity by knowing the N, P, C and S cycles. • Assess the various kinds of aquatic habitat in the eco-management process 	Local developmental needs

			<ul style="list-style-type: none"> To gain the knowledge about aquatic biotic production and biodegradation in different ecosystems. 	and biodegradation of different ecosystem.	
17	ELECTIVE III - FOOD BIOCHEMISTRY	BC914B	<ul style="list-style-type: none"> To learn the structure, composition, nutritional value, processing and storage of cereals. To understand the importance, composition, classification, processing and toxic constituents of spices and pulses. To know the classification of nuts and oils, fat and oils, milk and milk products; nutritive values and significance. To understand the composition, classification, importance of vegetables and non-vegetable foods. To learn about the sugar, sugar products, baking and beverages of food 	<ul style="list-style-type: none"> Identify the structure and composition, nutritional value, processing, storage and care of cereals. Focus the importance, composition, classification of spices, composition, classification, nutritional value, processing and fermentations, toxic constituents of pulses. Justify the nutritive value, importance and classification of nuts , oils, milk and milk products. Integrate the selection, storage, uses and nutritional aspects of meat, fish and poultry. Explain the composition, classification of egg products, storage of fruits and vegetables. Determine the sugar products, baking products and processing of beverages. 	Local developmental needs
18	ELECTIVE III - BIONANOTECHNOLOGY	BC914C	<ul style="list-style-type: none"> To understand the fundamental principles of nanotechnology and its applications. 	<ul style="list-style-type: none"> Demonstrate the fundamental principles of nanotechnology and their application to biomedical engineering. Exhibit the state-of-the-art nano- 	National developmental needs

			<ul style="list-style-type: none"> • To study about the basic knowledge about nanoparticles and its biological applications. • To apply engineering concepts and demonstrate a comprehensive understanding of state-of-the-art nano- scale and nano-fabrication methods. • To evaluate the processing conditions to engineer functional nanomaterials. • To apply and transfer interdisciplinary approaches to bionanotechnology. 	<p>fabrication methods</p> <ul style="list-style-type: none"> • Apply the knowledge of assessing nanomaterials and their safety • Make inferences on handling methods required during characterization • Justify the usage of nanomaterials in biological applications. • Compile the information about nanomedicines and their uses. 	
19	ADVANCED CLINICAL BIOCHEMISTRY	BC1009	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	Global developmental needs

			<ul style="list-style-type: none"> • To understand the functions of liver and its associated disorders. • To understand the oxidative stress and damage to the macromolecules. 	<p>serum enzymes like Acid phosphatase, Streptokinase, Asparaginase, Isocitrate dehydrogenase, Ceruloplasmin, CK and LDH.</p> <ul style="list-style-type: none"> • 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. 	
20	BIOTECHNOLOGY	BC1010	<ul style="list-style-type: none"> • To impart knowledge on basic tools in genetic engineering. • To provide knowledge on cloning vectors and DNA sequencing. • To create awareness on gene transfer and its applications. • To understand basics on Industrial biotechnology. • To develop sound knowledge on Bio-safety and bio-hazards. 	<ul style="list-style-type: none"> • Perceive a broad knowledge on gene transfer system, restriction enzymes and hybrid vectors in genetic engineering. • Explain the gene cloning technique, gene library, PCR and Blotting Techniques. • Outline the Tissue Culture, protoplast fusion, GM foods and xenografting. • Describe the basic concepts of fermentation and their industrial applications. • Determine the biological weapons, gene drain and tangled genes. • Interpretation of Vaccines with RNA virus and safety of GMOs 	National developmental needs

21	ELECTIVE IV - PLANT: BIOCHEMISTRY AND MOLECULAR BIOLOGY	BC1011A	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 dormancy 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
22	ELECTIVE IV HERBAL TECHNOLOGY	BC1011B	<ul style="list-style-type: none"> • To learn about the preparation of drugs. • To know about Herbal remedies for human ailments. • To evaluate the propagation of medicinal plants. • To study the Nutritive and medicinal value of fruits. • To know the applications of Herbal foods. 	<ul style="list-style-type: none"> • Discuss the importance of Nutritive and medicinal value of fruits • Acquire knowledge of Collection of wild herbs and its formulations • Perceive the knowledge of Systems of Indian Medicines–Siddha, Unani, Ayurveda and Homeopathy. • Evaluate the Drugs for common disorders and its mechanism of action. • Analyse the applications of Herbal foods– Food processing and packaging. 	Regional developmental needs

				<ul style="list-style-type: none"> Integrate the biotechnological principles in propagation of medicinal plants. 	
23	ELECTIVE IV MEDICAL DIAGNOSTIC TECHNOLOGY	BC1011C	<ul style="list-style-type: none"> To gain knowledge about good laboratory practices. To study the collection and preservation of biological specimens. To evaluate the knowledge of Hematological parameters. To study about the Microscopic and Macroscopic Examination of Urine and Feces. To learn culturing of organisms using microbiological techniques 	<ul style="list-style-type: none"> Understand the knowledge about good laboratory practices. Acquire a broad knowledge of collection and preservation of biological specimens. Perceive a broad knowledge of haematological parameters. Observe the microscopic and macroscopic examination of urine. Analyse the microscopic and macroscopic examination of faeces. Integrating the safety procedures in microbial culture techniques. 	Regional developmental needs

Program Name : BCA

Programme Outcomes (POs) at Undergraduate Level (POs)

Undergraduates will be able to	
PO1	Discuss their new knowledge and understanding; apply new ideas in - order to acquire employability/self-employment
PO2	Pursue higher learning programmes and become entrepreneurs
PO3	Recognize moral and ethical values and be socially responsible citizens in the society
PO4	Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
PO5	Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings
PO6	Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
PO7	Demonstrate communication skills both oral and written in personal and academic pursuits.

Programme Specific Outcomes (PSOs)

After Completion of the BCA Programme, the graduates will be able to	
PSO1	Obtain computing skills and apply software engineering principles and practices in software development
PSO2	Become a skilled employee in software industry, government, academia, research and other areas where computer applications are deployed.
PSO3	Acquire knowledge to pursue higher education in the IT and IT enabled specializations
PSO4	Develop team building and team leading capabilities with good communication skills, ethics and social responsibilities.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
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1	DIGITAL COMPUTER FUNDAMENTALS	CA107	<ul style="list-style-type: none"> • To know and understand the fundamentals of a computer system • To understand the basics of digital design and number systems • To learn about combinational gates and k-maps to simplify the Boolean functions • To know and understand the purpose of sequential circuits • To learn the purpose of different registers and counters 	<ul style="list-style-type: none"> • Explain the Characteristics, Generations of a Computer, Purpose and Types of Input & Output Unit, Processing Unit, Memory Unit and Storage devices • Understand different Number Systems, Complements available to represent data and IC Logic gates, Boolean algebra for the simplification of expressions for Computer processing. • Apply the Boolean Algebra rules and K-maps for simplification of expressions and explain the purpose and working of Combinational Circuits • Understand and analyze the Sequential logic circuits - flip flops • Draw the circuit diagram and explain the purpose and types of registers, counters. • Understand and analyze the different types of memory units 	National Developmental Needs
2	INTERNET CONCEPTS AND WEB DESIGN	CA108	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	Global Developmental Needs

			<p>of Cascading Style Sheet.</p> <ul style="list-style-type: none"> To be aware of the method of Java Script. 	<p>to design web pages. K3</p> <ul style="list-style-type: none"> 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 validations. K6 	
3	PROGRAMMING WITH C	CA207	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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
4	OPERATING SYSTEM	CA208	<ul style="list-style-type: none"> To study the basic concepts of operating systems and the design of operating system To understand various CPU scheduling algorithms, Process synchronization and the deadlocks. To learn the memory management, paging and segmentation techniques. 	<ul style="list-style-type: none"> Describe the important computer system resources and the role of operating system in the coordination and control of computer resources. Understand the process management techniques and scheduling algorithms Evaluate the requirement for 	National Developmental Needs

			<ul style="list-style-type: none"> • To be aware of the concepts of file system, allocation methods and Free space management. • To understand the concepts of disk scheduling. 	<p>deadlock process synchronization and deadlock handling methods.</p> <ul style="list-style-type: none"> • Explain and analyze the memory management and its allocation policies. • Apply the file management policies with respect to different storage management technologies • Understanding the integration of various File system structure 	
5	OFFICE AUTOMATION	CC110	<ul style="list-style-type: none"> • 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
6	INTERNET CONCEPTS AND WEB DESIGN	CA110	<ul style="list-style-type: none"> • 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

7	COMPUTER NETWORKS	CA312	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
8	PROGRAMMING WITH JAVA	CA313	<ul style="list-style-type: none"> • To understand the basics of Object Oriented Programming concepts, Character Set, tokens, variables, data types, operators and 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. 	<ul style="list-style-type: none"> • Remember the basic concepts of object oriented programming and important features of Java 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 	Global Developmental Needs

				<p>graphical user interface design and implementation using swing.</p> <ul style="list-style-type: none"> Describe Swing component classes 	
9	ELECTIVE – I ANGULAR JS	CA315A	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 server, manipulate it and display it with ease. 	Global Developmental Needs
10	ELECTIVE – I: OBJECT ORIENTED ANALYSIS AND DESIGN	CA315B	<ul style="list-style-type: none"> To understand the diagrams UML. To prepare the students to draw class modeling diagrams. To make the students to understand the importance of state modeling diagrams. To become knowledgeable in interaction modeling diagrams. To understand the basic concept of system conception and design. 	<ul style="list-style-type: none"> Understand the modeling concept and object Oriented designs, recognize the notations of UML Create UML diagrams with proper notations and uses Apply their skill on framing new design based on the requirements Analyze the system requirements with UML diagrams and design the systems Implement modules, process flows of the systems Evaluate the requirements, 	National Developmental Needs

				designs, and process flow of the systems	
11	ELECTIVE - I: SYSTEM ANALYSIS AND DESIGN	CA315C	<ul style="list-style-type: none"> To learn the system development design strategies. To understand structured analysis development methods. To know computer input and output design strategies. To design online dialogue and auxiliary storage devices. To understand the Systems engineering and quality assurance concepts. 	<ul style="list-style-type: none"> Understand the design and development of systems Apply and analyze the design based on requirements to develop systems Create system designs based on inputs and outputs Describe the memory storage devices Evaluate the quality of the system Acquire knowledge on software development 	National Developmental Needs
12	SOFTWARE ENGINEERING	CA518	<ul style="list-style-type: none"> To Understand the Software Engineering Practice and Process Models. To Understand Software Process Modeling Concepts. To know the concept of Architectural Design method in Software Engineering. To understand Component based software Engineering. To know the various methods of Reengineering. 	<ul style="list-style-type: none"> Identify the need for engineering approach to software development and various processes k1 Understand about software myths, generic view of the process and process models k2 Analyze various software engineering models and apply methods for design and development Process. K4 Acquire knowledge on the wider perspective of software engineering architecture design Assess the concept of Component Based software Engineering Enhance in the techniques of risk management and re-engineering 	National Developmental Needs

13	ENTERPRISE APPLICATIONS USING .NET	CA413	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.NET applications using standard .NET controls. • Analysis and evaluate the validation and rich controls • Create and connect the data sources in ADO.NET 	Global Developmental Needs
14	RELATIONAL DATABASE MANAGEMENT SYSTEM	CA414	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
15	EMERGING COMPUTING PARADIGM	CA415	<ul style="list-style-type: none"> • To learn the benefits of E-Commerce and the features available in e-business. • To introduce the basics of Block Chain and its applications. • To know and implement 	<ul style="list-style-type: none"> • Explain the benefits of E-Commerce and the features available in e-business. • Understand the basics of Block Chain and its applications. 	National Developmental Needs

			<p>content management system and various CMS models exist.</p> <ul style="list-style-type: none"> • To know and understand machine learning and its different categories of algorithms. • To understand the basics and uses of Artificial Intelligence System and quantum computing. 	<ul style="list-style-type: none"> • Study and apply content management system and various CMS models exist. • Understand, analyze and evaluate machine learning and its different categories of algorithms. • Explain and implement the basics and uses of Artificial Intelligence System. • Understand and analyze the basics of Quantum Computing 	
16	COMPUTER GRAPHICS	CA515	<ul style="list-style-type: none"> • The main objective of the course is to introduce fundamental concepts and theory of computer graphics. It represents the important drawing algorithm, polygon filling, clipping and 2D transformation curves and an introduction to 3D transformation. It provides the basics of OpenGL application programming interface. 	<ul style="list-style-type: none"> • Enumerate the mechanisms involved in basic transformation of an object in Two dimensions. • Identify the basic function of displays and algorithm mechanism for generating line and circle. • Apply the transformation effects to the objects in Three dimensions. • Analyze the procedure in manipulating an object from window to viewport. • Predict the possible surface for the visibility of the objects • Determine projected objects to naturalize the scene in 2D view. 	National Developmental Needs
17	ENTERPRISE APPLICATIONS USING JAVA	CA516	<ul style="list-style-type: none"> • This course provides a platform with enterprise features such as distributed computing and web services. Java EE has several 	<ul style="list-style-type: none"> • Learn and Understand the structure of web applications and enterprise programs 	Global Developmental Needs

			<p>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.</p>	<ul style="list-style-type: none"> • 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 	
18	PROGRAMMING WITH PYTHON	CA517	<ul style="list-style-type: none"> • 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 and GUI applications. 	<ul style="list-style-type: none"> • 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
19	CLOUD COMPUTING	CA612	<ul style="list-style-type: none"> • This course introduces domain of cloud infrastructures, virtualization, software defined networks, cloud storage, and programming models. Modern data centers enable many of the 	<ul style="list-style-type: none"> • Describe the principles of Parallel and Distributed Computing and evolution of cloud computing from existing technologies • Implement different types of Virtualization technologies and 	Global Developmental Needs

			<p>economic and technological benefits of the cloud paradigm. Focus on virtualization as a key cloud technique for offering software, computation and storage services.</p>	<p>Service Oriented Architecture systems</p> <ul style="list-style-type: none"> • 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 	
20	MOBILE APPLICATION DEVELOPMENT	CA613	<ul style="list-style-type: none"> • 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 develop professional apps to send SMS, Notifications, Mails, Telephony and data manipulation using SQLite. 	<ul style="list-style-type: none"> • 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, 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 	Global Developmental Needs

21	WEB PROGRAMMING USING PHP	CA614	<ul style="list-style-type: none"> The objective of this course is to deliver the fundamentals of PHP. It helps to build dynamic web applications. It deals with MySQL queries and database connections to interact with frontend applications. 	<ul style="list-style-type: none"> 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
22	ELECTIVE – II :BIG DATA ANALYTICS	CA615A	<ul style="list-style-type: none"> 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 data. It also demonstrates the tools and methods to store big data with different data structures, perform statistical analysis and visualize the results. 	<ul style="list-style-type: none"> 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. 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 	Global Developmental Needs
23	ELECTIVE II: - CRYPTOGRAPHY AND NETWORK SECURITY	CA615B	<ul style="list-style-type: none"> This course develops a basic understanding of the algorithms used to protect data. A wide 	<ul style="list-style-type: none"> Recollect basic principles of security services and mechanisms. Describe the concepts of network 	Global Developmental Needs

			<p>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.</p>	<p>security like firewalls, IP security and virtual private network</p> <ul style="list-style-type: none"> • 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 	
24	ELECTIVE II: INTERNET OF THINGS	CA615C	<ul style="list-style-type: none"> • This course gives a foundation in the Internet of Things, including the components, tools, and analysis by teaching the concepts behind the IoT and a look at real-world solutions. This Course focuses on hands-on IoT concepts such as sensing, actuation and communication. It covers the development of Internet of Things (IoT) prototypes including devices for sensing, actuation, processing, and communication. 	<ul style="list-style-type: none"> • Remember the IOT based solution for real world applications • Realize the evolution of domain specific IoT. • Understand the building blocks of Internet of Things and its characteristics. • Understand the concepts of IOT and its application. • Develop the IoT devices with help of Tools • Apply the knowledge and skills acquired during the course to build and test a complete, working IoT system involving prototyping, programming and data analysis 	National Developmental Needs

Name of the Programme: MCA

Programme Objectives

The Programme aims to prepare the student to be skilled professionals, innovators or entrepreneurs engaged in technology development and deployment in the industry. The programme targets to prepare the students for the industry by imparting sound background in theoretical and applications-oriented courses relevant to the latest trends in the industry. It facilitates the students to find solutions and develop system based applications for real time problems in various domains involving technical, managerial, economic and social constraints. It also prepares the students to pursue higher studies in computing or related disciplines and to work in the fields of teaching and research and to recognize the need for and develop the ability to engage in continuous learning as a Computing professional.

The programme caters to the foundation of computing principles and business practices, train the students to analyze the problems in a wide range of applications and to solve mathematical, computing, communications / networking and commercial problems Special thrust is given to industrial experience by exposing the students to enterprise software management methodologies. It also intends to make the students aware of the major security risks and Provides a hands on environment on tools and practices for building secure systems. It targets the students to design, develop and support **a global security system using the state of mind and reasoning on software systems security.**

The programme offers Life and Employability skills to communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations. The students can apply the understanding of management principles with computing knowledge to manage the projects in multidisciplinary environments.

The students can avail additional certification courses to understand the societal, environmental, health, legal, ethical issues within local and global contexts and the consequential responsibilities relevant to professional practice.

Program Specific Outcomes (PSOs) of M.C.A

PSO1: Understand and apply the knowledge of computing skills inherited from the course to abstract and model real time problems.

PSO2: Integrate the problem solving and technical abilities to design and deploy software

PSO3: Identify, scrutinize, adopt and apply modern tools and technologies as per the requirements

PSO4: Realize the importance of working in a team and team building.

PSO5: Able to inculcate ad-hoc learning abilities with communication efficacy.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ENTERPRISE APPLICATIONS WITH JAVA	MCA160T	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	global developmental needs

				using Servlet and JSP.	
2	SCRIPTING TECHNOLOGY	MCA161T	<ul style="list-style-type: none"> To Learn the basic concepts in HTML, CSS, JavaScript, jQuery To Understand the responsive design and development To Design a Website with HTML, JS, CSS, jQuery 	<ul style="list-style-type: none"> Learn and apply the basic HTML Tags. Build and design a web page with the help of basic web components. Classify, Choose and Build jQuery and JavaScript applications. Differentiate and Construct client and server side Scripting Draft and Design a webpage using CSS. Devise and Create sample static webpages 	local developmental needs
3	OPTIMIZATION TECHNIQUES	MCA162T	<ul style="list-style-type: none"> To obtain knowledge on linear programming problems, transportation problems, assignment problems, inventory models, queuing models, project management and Game theory problems. 	<ul style="list-style-type: none"> 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 management and Game theory problems. 	national developmental needs
4	SOFTWARE TESTING AND QUALITY ASSURANCE	MCA163I	<ul style="list-style-type: none"> To be aware of essential concepts of software quality. To understand fundamental concepts in software testing, 	<ul style="list-style-type: none"> Observe and Explain the significance of software testing and quality assurance Discuss and Elicit the basics of 	local developmental needs

			<p>including software testing objectives, process, criteria, strategies, and methods.</p> <ul style="list-style-type: none"> • To identify the Systematic approach to the development, operation, maintenance, and retirement. • To apply software testing knowledge and methods in testing software projects 	<p>software testing, including objectives, process, criteria, strategies, and methodologies.</p> <ul style="list-style-type: none"> • Apply white box testing approach and Design the test cases. • Devise and Design test cases from the given requirements using Black box testing techniques • Observe, Recognize and do case studies on the need for System and user acceptance testing. • Discuss and Elicit importance of non-functional testing and the types of non-functional testing. 	
5	OPEN SOURCE DATABASE MANAGEMENT SYSTEM	MCA164I	<ul style="list-style-type: none"> • To construct simple and moderately advanced database queries using Structured Query Language (SQL). • To understand the role of the database administrator. 	<ul style="list-style-type: none"> • 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. • 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 	global developmental needs

				database administrator and	
6	ENTERPRISE APPLICATIONS WITH .NET	MCA260T	<ul style="list-style-type: none"> • To Learn the fundamental structured and object oriented features of the C# programming language. • To develop a stand-alone windows applications in the .NET framework using C#. • To learn and build an applications with WPF control, styles and resources using C#. • To create web-based applications using ASP.NET using C#. • To learn the usage and application of LINQ. 	<ul style="list-style-type: none"> • Infer and Apply the basics of structured programming. • Use the basics of object oriented programming and design object oriented programs. • Device and Develop programs in structured programming model. • Device and Design solutions in object oriented programming paradigm. • Construct Develop stand-alone windows applications in the .NET framework. • Construct, Device and Build applications with WPF control, styles and resources. • Create web-based applications using ASP.NET. • Build data aware standalone and web applications. • Illustrate the usage and application of LINQ. • Integrate solutions across console, windows and web frameworks. 	regional developmental needs
7	COMPUTER GRAPHICS	MCA261T	<ul style="list-style-type: none"> • To provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, 	<ul style="list-style-type: none"> • Understand and apply the core concepts and mathematical foundations of computer graphics. • Analyze and apply 2D and 3D transformations on graphics 	local, regional ,national and global developmental needs

			<p>and trends.</p> <ul style="list-style-type: none"> • 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. 	<p>objects and their applications in composite form.</p> <ul style="list-style-type: none"> • 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. 	
8	DESIGN AND ANALYSIS OF ALGORITHMS	MCA262T	<ul style="list-style-type: none"> • 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 algorithms with applications. • To learn about reduction, non-deterministic and parallel algorithm with applications. 	<ul style="list-style-type: none"> • 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. 	global developmental needs

				<ul style="list-style-type: none"> • Design and Evaluate any given problem with mathematical rigor to provide a scientific solution. 	
9	ELECTIVE I: ARTIFICIAL INTELLIGENCE	MCA263TA	<ul style="list-style-type: none"> • Study the concepts of Artificial Intelligence. • Learn the methods of solving problems using Artificial Intelligence. 	<ul style="list-style-type: none"> • 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. • 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 	global developmental needs
10	ELECTIVE I: INTERNET OF THINGS	MCA263B	<ul style="list-style-type: none"> • To understand the different architectures of IoT. • To learn various protocols at the different layers for IoT. • To develop prototypes systems using Arduino / Rasberry Pi. • To apply the use of data 	<ul style="list-style-type: none"> • Acquire and use the various objects or things handled in the connectivity • Learn and Practice to connect and activate the objects with procedure (domain specific). • Compare and correlate the 	regional developmental needs

			analytics in IoT.	<p>network layer model with Internet of Things layers.</p> <ul style="list-style-type: none"> • Observe and Apply analysis techniques on the constructed model (domain specific). • Analyze and Assess IoT communication (connecting and passing data) using different architectures. • Do Case study and build the Architecture and Use cases for the domain specific problems 	
11	ANDROID APPLICATION DEVELOPMENT	MCA264I	<ul style="list-style-type: none"> • To understand the design issues in the development of mobile applications. • To design the right user interface for mobile application. • To understand the development procedure for mobile application. • To develop mobile applications using various tools and platforms. 	<ul style="list-style-type: none"> • Recognize and recall the various tools and technologies used to develop mobile applications. • Install and interact android studio and related SDK and enabling emulator or mobile device • Apply various design components in the development of mobile applications • Identify the right user interface for mobile application • Discuss the various UI components with SQLite and establish database connection. • Develop mobile applications using various tools and platforms 	local developmental needs
12	PYTHON PROGRAMMING	MCA360T	<ul style="list-style-type: none"> • To understand the fundamentals of writing Python scripts, Python scripting elements. • To create a dynamic web page 	<ul style="list-style-type: none"> • Observe and practice the fundamentals of writing Python scripts and Python scripting elements. 	national developmental needs

			using Python.	<ul style="list-style-type: none"> Express and Apply the concepts of file handling, exception handling and database connectivity. Apply and build the different dimensions of design and development. Devise and Design GUI applications. Draft and Create a dynamic web page using DJANGO. Devise and Develop domain based applications 	
13	BLOCK CHAIN TECHNOLOGY	MCA361T	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. Observe and Classify the application of blockchain in 	global developmental needs

				<p>Internet of Things.</p> <ul style="list-style-type: none"> • Discuss and Justify the application of blockchain in Government sector. 	
14	OPEN SOURCE FRAMEWOKS	MCA362T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 developmental needs
15	ELECTIVE II: CLOUD COMPUTING	MCA363A	<ul style="list-style-type: none"> • To understand the concept of cloud computing. • To appreciate the evolution of cloud from the existing technologies. • To have knowledge on the various issues in cloud computing. • To be familiar with the lead players in cloud. • To appreciate the emergence of cloud as the next generation 	<ul style="list-style-type: none"> • Observe and Discuss the fundamental ideas behind Cloud Computing. • List and Explain about cloud computing and the services that are available. • Observe and Correlate the major three services IaaS, SaaS and PaaS. • Observe the various storage services (like amazon S3) and able to practice them. 	national developmental needs

			computing paradigm	<ul style="list-style-type: none"> Understand the benefits Cost Effectiveness of Cloud computing and Analyze the Cost Effectiveness. Analyze and Evaluate the performance of Cloud Computing 	
16	ELECTIVE II: SOCIAL NETWORK ANALYSIS	MCA363B	<ul style="list-style-type: none"> To learn knowledge representation using ontology. To understand the sources for network analysis. To understand the concept of semantic web and related applications. To understand knowledge representation on semantic web. To model and aggregate social networking of data. 	<ul style="list-style-type: none"> At the end of the course, the students will be able to Adopt to the concepts of semantic web. Perform social network analysis Represent knowledge in semantic web. Model social network data Aggregate and analyze social network data 	National developmental needs
17	ELECTIVE III: ENTERPRISE RESOURCE PLANNING	MCA364A	<ul style="list-style-type: none"> To provide a basic understanding and knowledge of the Enterprise Computing techniques used in industries. To understand basic concepts, tools and Techniques of Enterprise Resource Planning. To analyze and propose IT solutions for the integration of business process throughout the enterprise. To aim for careers in various ERP consultancies, ERP-support services and Software 	<ul style="list-style-type: none"> Observe and Comprehend the knowledge of business benefits of implementing the enterprise computing techniques in the industries. Examine and Assess the ERP package's technology and how they help to streamline the company process. Analyse , Evaluate and integrate ERP into various business modules. Evaluate and comprehend the ERP system's pre and post 	national developmental needs

			<p>Developers.</p> <ul style="list-style-type: none"> To understand the business model and ERP Implementation. 	<p>implementation phases.</p> <ul style="list-style-type: none"> Draft and Design ERP with future e-commerce / internet and compare the benefits of re-engineered business process through a case study. Recognize and Observe the importance of ERP package through case studies 	
18	ELECTIVE III: BIG DATA	MCA364B	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Bring out and Classify the data grouping mechanism in structured, semi-structured, and unstructured form. 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 	global developmental needs

19	ELECTIVE IV: DATA ANALYTICS WITH R PROGRAMMING	MCA466A	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 • 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 	global developmental needs
20	ELECTIVE IV: DATA AND INFORMATION SECURITY	MCA466B	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	global developmental needs

				<ul style="list-style-type: none"> 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. 	
21	ELECTIVE V: DATA MINING TECHNIQUES	MCA467A	<ul style="list-style-type: none"> To Learn the fundamentals of Data Mining. To Learn the concepts of clustering and classification. To understand the trends in Data mining. To analyze data, choose relevant models and algorithms for respective applications. To develop research interest towards advances in data mining. 	<ul style="list-style-type: none"> Understand the fundamentals of Data Warehouse and Data Mining Observe and Discuss the concepts of preprocessing, association mining, clustering, classification and Regression Recognize and Explore various tools and its uses for data analysis Apply and analyze the clustering and classification techniques for a specific problem. Recognize and Solve real-world problems in business and scientific information using data mining. Recognize, Device and Build statistical predictive models using various techniques such as neural networks, decision trees and logistic regression. 	national developmental needs
22	ELECTIVE V: GAME PROGRAMMING	MCA467B	<ul style="list-style-type: none"> To learn about the gaming environment. To learn about the 3D programming concepts. To know about the client and 	<ul style="list-style-type: none"> Describe and Discuss the principles of 2D and 3D graph images and handling of shapes. Observe and Demonstrate the basics of game design and 	global developmental needs

			<p>server module in game programming.</p> <ul style="list-style-type: none">• To create a model game	<p>development.</p> <ul style="list-style-type: none">• 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	
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Name of the Programme: B.A. English

Programme Outcomes at Undergraduate Level

Programme will be able to:

PO1	Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment
PO2	Pursue higher learning programmes and become entrepreneurs
PO3	Recognize moral and ethical values and be socially responsible citizens in the society
PO4	Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
PO5	Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings

PO6	Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
PO7	Demonstrate communication skills both oral and written in personal and academic pursuits

Programme Specific Outcomes at Undergraduate Level

Programme will be able to:

PSO1	Demonstrate all the four basic English language skills both in formal and informal settings, know all the nuances of language and language teaching and be an effective English language trainer
PSO2	Comprehend the interplay between history of English literature and the social history of England; recognize the predominant school of thoughts pertaining to the ages; express in creative ways through the different forms of literature
PSO3	Discuss the richness and uniqueness of Indian writings in English and its position among the world literature
PSO4	Reread a work of art applying both existing and emerging critical theories
PSO5	Compile the literatures from around the world especially, the American, Common Wealth, etc., including women's writings and evaluate their uniqueness

PSO6	Find suitable career prospects in the areas of Journalism, Translation and Media.
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Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
English – I: Basic Communication	EN111T	<ul style="list-style-type: none"> • To introduce students to the basics of communication in English • To learn a list of vocabularies like nouns that are commonly used in daily life • To introduce students to basic grammar • To be able to frame correct sentences both in spoken and written forms • To prepare the students to interact with others in English with apt body language • To enable students to appreciate literary pieces 	<ul style="list-style-type: none"> • CO1:Converse in simple English using appropriate vocabulary at home, in the playground, at college, and while cooking and eating • CO2:Greet others, introduce oneself and others, invite and request someone, offer help- accept it and decline it, seek permission, ask for advice, and express gratitude • CO3:Exhibit adequate writing skill in English using nouns and verbs prescribed for study • CO4: Demonstrate practical knowledge of various parts of speech; past tense, present tense, and future tense; articles and prepositions • CO5: Discuss and analyse, themes and characters of short stories written by Jean Ure, Stephen Leacock, A. G. Gardiner, and Somerset Maugham and poems by Robert Frost and G. M. Hopkins; express appreciation of aesthetic aspects of literary works 	regional developmental needs

<p>English – II: Basic Communication</p>	<p>EN112T</p>	<ul style="list-style-type: none"> • To help learners to build over the basic communication skills obtained in the previous semester in English • To be able to frame correct complex sentences both in spoken and written forms • To introduce students to idioms • To prepare the students to interact with others in English with apt body language • To enable students to appreciate literary pieces 	<ul style="list-style-type: none"> • At the end of the Course, the learners will be able to : • CO1:Converse in English using appropriate vocabulary in Hospital, while gardening, travel and professional environments; discuss about weather, seasons, universe, roads and traffic signals • CO2:Compliment and congratulate; persuade and remember someone; complain and apologize; make suggestions and warn someone; and ask about possibility • CO3:Exhibit adequate writing skill in English using nouns and verbs prescribed for study • CO4: Demonstrate practical knowledge of grammar related to subject verb agreement and punctuations; direct and indirect speech; conditional statements, questions, negation, command and request; active and passive voice and run-on sentences • CO5: Discuss and analyse, themes of essays/short stories written by Dr. APJ Abdul Kalam, O. Henry and Cedric Mount; poems by P. B. Shelley and Khalil Gibran; express appreciation of aesthetic aspects of literary works 	<p>Local developmental needs</p>
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English - III: Public Communication	EN113T	<ul style="list-style-type: none"> • To introduce students to the art of communication and public speaking in English • To train the minds to think in English • To narrate an incident or a story, share an experience, etc. • To enhance proficiency in Writing skills of the students focusing on vocabulary already learnt and acquiring new vocabulary • To express their opinion on various current issues related to social, political, etc. • To understand and appreciate English prose passages and Poems 	<ul style="list-style-type: none"> • At the end of the Course, the learners will be able to: • CO1: Introduce oneself, describe, narrate in informal situations; welcome, introduce a guest and thank in a formal gathering; face an interview in person or online; seek and give information over telephone in simple English • CO2: Prepare and present professional presentations; negotiate and involve in Group Discussions with a professional approach in English • CO3: Exhibit writing skill in English in writing short speeches, apply for jobs, prepare resumes, pen business letters and write professional reports • CO4: Demonstrate knowledge and use of phrasal verbs and idioms that are commonly used as well as job-related in real life situations • CO5: Discuss and analyse, themes and characters of short stories written by Edward De Bono Kamala Das, O. Henry, T.S Eliot. Stockton, , John Milton, express appreciation of aesthetic aspects of literary works 	regional developmental needs
English - IV: Business Communication	EN114T	<ul style="list-style-type: none"> • To Enhance the proficiency of Business Communication skills of the students focusing on the words, and expressions commonly 	<ul style="list-style-type: none"> • At the end of the Course, the learners will be able: • To prepare their resumes and write business-related letters 	Regional developmental needs

		<p>used in the business environment</p> <ul style="list-style-type: none"> • To develop the ability to communicate clearly, correctly and effectively in written English on matters having relevance to day-to-day business operations • To use appropriate words, proper construction of sentences, and coherent presentation conforming to widely accepted corporate practices • To create quality work force for the industry 	<ul style="list-style-type: none"> • To face both face-to-face interview and tele-interviews • To write minutes of meeting and short reports • To follow telephone etiquette in asking for and giving information, and make, cancel and reschedule appointments • To write letters to express congratulations, sympathy, and condolences • To handle visitors and customers in a business environment with proper diction • To negotiate in business situations and participate in Group Discussions 	
Chaucer and Elizabethan Age	EN207	<ul style="list-style-type: none"> • To train the learners to get an overall perspective of the literature of Chaucerian Age • To make the learners to understand the poetic forms in Chaucer and Elizabethan Age • To expose the learners to the features of prose writings in Chaucer and Elizabethan Age • To enable the learners to appreciate the features of Chaucer and Elizabethan drama • To help the learners to understand the English Social life during Chaucer and Elizabethan Age 	<ul style="list-style-type: none"> • Appreciate the features of Chaucer and Elizabethan poems, prose • Get an over view of the Chaucer and Elizabethan Age • They can understand the English Social life during Chaucer and Elizabethan Age • Categorise various genres in Chaucer & Elizabethan Age • Create the similar traditional forms of poetry as in the particular age 	national

18 th Century English Literature	EN208	<ul style="list-style-type: none"> • To give a broad introduction to the Literature and Culture of the Eighteenth Century England • To explore the classical notion of Science and Literature, Nature and Imagination during the Eighteenth Century • To give a taste of the eighteenth-century poetry and novel • To enhance the students' knowledge of the literary accomplishments and an exposure to the eighteenth-century writers • To familiarize the students with the concepts that evolved during that era. 	<ul style="list-style-type: none"> • Students will be able to Know and remember the various developmental stages of 18th century in the English literary field. • Students will be able to explain the classical notions of Science and literature, Nature and Imagination during the eighteenth - century • Students will be able to enrich student's mind with the taste of the eighteenth-century Poetry with the concepts of Eighteenth-century writers • Students will be able to describe, analyze, interpret and evaluate 18th century dramatic literature and theatrical productions. • Students will be able to understand the theoretical concepts and its development that could develop student's critical thinking. 	national
Literary Forms	EN209	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	national

		<p>characteristics</p> <ul style="list-style-type: none"> To recognize and define a few important forms of poetry such as sonnet, ode, ballad, elegy, etc. 	<p>important forms of poetry such as sonnet, ode, ballad, elegy, etc.</p>	
Social History of England	EN210	<ul style="list-style-type: none"> To enable the students to acquire some basic knowledge of the social history of England To help students to recognize English thought, culture and history reflected in the study of literature To facilitate students to understand the changing environment in the history of England and English Literature To train the students to see the social life of the people of an era mirrored in the literature of the corresponding era. 	<ul style="list-style-type: none"> By the end of this course, students will be able to: Develop an ability to read texts in relation to their historical and cultural context Gain a richer understanding of both text and context Become aware of themselves as situated historically and culturally Think critically and creatively and develop detailed methods of analysis and response 	Local and regional
Romantic Age	EN306	<ul style="list-style-type: none"> To make students read and understand the age of romanticism in the light of recent approaches To review the traditional concepts of genres and also to focus on new interpretation in the contemporary context To provide an overview of the literary climate where the romantic sensibility finds an authentic voice touch and intensity To enable students to demonstrate 	<ul style="list-style-type: none"> CO1: Know and remember the various developmental stages of Romantic age in English literary field CO2: Demonstrate an understanding of Poetical production during Romantic Era in English literary world CO3: Able to apply and test knowledge on variety of Poetical and literary productions CO4: Able to describe, analyze, interpret and evaluate the concepts 	regional

		<p>knowledge and understanding of a range of fictional, Poetic and other texts often described as 'Romantic'</p> <ul style="list-style-type: none"> To find the interrelationship between the literary production and its wider historical context 	<p>of Romantic age</p> <ul style="list-style-type: none"> CO5: Able to evaluate poems, Novels, and the dramas of Romantic era and use critical analysis in writing analytical articles 	
History of English Literature -I	EN308	<ul style="list-style-type: none"> To enrich the students with the wide knowledge of the historical and biographical details of writers of various ages. To make the students understand the development of British Literature 	<ul style="list-style-type: none"> CO1: Gain knowledge of the History of Literature and great authors of English. CO2: Interconnect the history, biography of the author and the works. CO3: Analyse the growth of literary genres of specific periods. CO4: Evaluate the role of literary movements and their impact on the literary works. CO5: Help the learners to identify great authors and their ages. 	national developmental needs
History of English Language	EN309	<ul style="list-style-type: none"> To comprehend the mechanisms of Language change and an acceptance of the inevitable nature of Language change To acquire knowledge of the Origins of English and its place in respect to other languages of the world To recognize the major stages in the Language and important changes in the development of English from a Synthetic to an 	<ul style="list-style-type: none"> An understanding of the history of English language from the old English Period to Modern day Influence Distinguish between language varieties. Students will understand origin and development of the language Apprehend the growth of vocabulary for ages. 	regional developmental needs

		<p>Analytic language</p> <ul style="list-style-type: none"> • To understand, how the current state of the language has resulted from historical change • To develop a knowledge of the English Language from its Indo-European past to the present day 		
Major English Tragedies	EN407	<ul style="list-style-type: none"> • To enable the students to appreciate tragedy as an enduring literary term and relate with the tragic themes • To enable the students to understand the works of various writers that embody truths and transcend time and all cultures • To make the students gain knowledge of the style of the tragedies, the heroic deeds, understand the tragic flaws and the tragic end of the • To help the students to study Major English Tragedies which are abound with ideas that are still relevant today protagonist. 	<ul style="list-style-type: none"> • The students will be able to appreciate tragedy as an enduring literary term and can relate with the tragic themes • The students will be able to understand the works of various writers that embody truths and transcend time and all cultures • The students can gain knowledge of the style of the tragedies, the heroic deeds, understand the tragic flaws and the tragic end of the plays • The students will be able to understand the Major English Tragedies which are abound with ideas that are still relevant to today's protagonist. 	regional developmental needs
History of English Literature – II	EN415	<ul style="list-style-type: none"> • To enrich the students with the wide knowledge of the historical and biographical details of writers of various ages. • To make the students understand the development of British Literature 	<ul style="list-style-type: none"> • CO1: Gain knowledge of the History of Literature and great authors of English. • CO2: Interconnect the history, biography of the author and the works. • CO3: Analyse the growth of literary genres of specific periods. 	national developmental needs

			<ul style="list-style-type: none"> • CO4: Evaluate the role of literary movements and their impact on the literary works. • CO5: Help the learners to identify great authors and their ages. 	
Indian Writing in English – I (Pre-Independence Era)	EN416	<ul style="list-style-type: none"> • To inspire the learners to approach and appreciate Indian literature in English • To provide an overview of the various phases of the evolution of Indian writing in English • To explore its uniqueness and its place among the literature in English • To motivate the learners for a critical and comparative study of Indian literature 	<ul style="list-style-type: none"> • Identify the major writers of Indian literature in the Pre-Independence era • Compare and contrast the different genres of writing • Read and interpret the various movements of the age • Demonstrate an understanding of the themes present in Indian literature • Develop the ability to critically read a text 	regional developmental needs
Phonetics	EN410	<ul style="list-style-type: none"> • To help the students to understand all the sounds of English and the organs of Speech • To provide students an overview of vowels, Consonants, and word Accent, intonation. • To acquire an understanding of speech as the international phonetic transcription • To give a systematic, conscious consideration of how speech sounds are made, what they sound like, and how they compare with each other. 	<ul style="list-style-type: none"> • CO1: Decipher phonetics symbol with sounds • CO2: Use right accent, intonation and rhythm in speaking • CO3: Analyse the syllable and accent • CO4: Classify the speech sound • CO5: Transcribe into phonetic language 	regional developmental needs

Victorian Age	EN408	<ul style="list-style-type: none"> • To enable the learners to form an overview of the Victorian age • To help the learners to understand and appreciate the writers of Victorian age • To train the learners to read and appreciate the novel of Victorian age • To expose the learners to few poems, short stories of Victorian age • To develop a clearer understanding of the period its tensions, enthusiasm, hopes, fears, and sometimes contradictory moral and intellectual principles through reading, discussion, and writing. 	<ul style="list-style-type: none"> • CO1: acquire knowledge about the writers and their works in the Victorian age • CO2: Assimilate the subjects in their critical way will be high regarding the works of writers of Victorian age • CO3: Analyse the work of a range of Victorian writers, both canonical and less well-known, and with a range of genres including the novel, short story and poetry. • CO4: Identify and discuss theoretical discourse concerning class, sexuality, gender and colonialism as these illuminate a range of Victorian texts • CO5: understand and deploy a range of terms and concepts integral to Victorian Literature 	regional developmental needs
20 th Century English Literature	EN409	<ul style="list-style-type: none"> • To introduce the essential characteristics, major trends and techniques of 20th Century English Literature • To familiarize them to the works of modern writers 	<ul style="list-style-type: none"> • CO1: student might have learnt the essential characteristics, major and techniques of 20th century English literature. • CO2: they can identify and describe distinct literary characteristics of modern writers • CO3: students can analyse poetic works for their structure and meaning, using the correct terminology • CO4: students will be able to enact the dramas through that they can 	regional developmental needs

			<p>categories the various dramas</p> <ul style="list-style-type: none"> • CO5: know and remember the various developmental stages of 20th century English literature. 	
Indian Writings in English (Post-Independence era)	EN520	<ul style="list-style-type: none"> • To introduce the students to major writers of Indian Literature in English of the Post-Independence period. • To familiarize them with the different genres of writing • To introduce them to the different movements of the age • To examine the themes presented in Indian Literature • To develop the ability to critically analyse a text 	<ul style="list-style-type: none"> • Identify the major writers of Indian literature in the Post- Independence era • Compare and contrast the different genres of writing • Read and interpret the various movements of the age • Demonstrate an understanding of the themes present in Indian literature • Develop the ability to critically read a text 	regional developmental needs
Literary Criticism-I	EN519	<ul style="list-style-type: none"> • To introduce to the students the world of Literary Criticism. • To make the students to learn and understand critical analysis and interpretation. • To make the students to learn and understand to evaluate literature. • To make the students to learn and understand the examination of literary contexts, types, theme, trends, history, or principles • To enable the students to understand and appreciate and to enhance proficiency in all kinds of literary work. 	<ul style="list-style-type: none"> • understand Literary Criticism • understand critical analysis and interpretation • evaluate literature • examine the literary contexts, types, theme, trends, history, or principles • appreciate and enhance and be proficient in all kinds of literary work 	regional developmental needs

Elective-I: Common Wealth Literature	EN521A	<ul style="list-style-type: none"> • To sensitize the history of Commonwealth Nations • To familiarize the students with the recent works of writers from different pockets of the world with an open mind, to understand and appreciate them • To weigh the claims of universalism made on behalf of canonical texts in juxtaposition to the elements of heredity, marginality, plurality and ‘otherness’, by examining these texts • To demonstrate knowledge and awareness of some components of Commonwealth Nations’ cultural heritage such as artistic, historical, linguistics, literary, and philosophical foundations. • To Promote creative writing in English 	<ul style="list-style-type: none"> • Appreciate all the literary works under Commonwealth Literature as a part of English Literature. • Understand the global relevance, significance and resonance of Commonwealth Literature today. • Analyse and evaluate the postcolonial aspects of the literary works from Commonwealth nations • Appreciate the contribution of translation studies to Commonwealth Literature. • Critically analyse the relevance of the works in the light of globalization. 	national developmental needs
Elective-I: Literature and Film	EN521B	<ul style="list-style-type: none"> • To identify the fundamentals of film making and analysis to study film as a genre in the literary tradition. • To use various literary and cinematic terms to discuss, interpret, and analyze representative texts. • To respond to, analyze, and evaluate films as literary texts. 	<ul style="list-style-type: none"> • CO1: Identify the fundamentals of film making and analysis to study film as a genre in the literary tradition. • CO2: Relate various literary and cinematic terms to discuss, interpret, and analyze representative texts. • CO3: Respond to, analyze, and evaluate films as literary texts • CO4: Demonstrate critical reading 	Local developmental needs

		<ul style="list-style-type: none"> • To Demonstrate critical reading of texts and use a style appropriate for academic discourse by writing multi-page papers. • To show an understanding how the political, socio-cultural, and historical contexts of literature translate into film making and analysis. • To synthesize connections between individual texts and a variety of literary and cinematic interpretations. 	<p>of texts and use a style appropriate for academic discourse by writing multi-page papers.</p> <ul style="list-style-type: none"> • CO5: Synthesize connections between individual texts and a variety of literary and cinematic interpretations. 	
Elective-I: Women's Writings	EN521C	<ul style="list-style-type: none"> • To initiate an interest in the learners for the women writers in English • To enable students to approach 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 know the underlying themes expressed by women writers • To understand and appreciate the inner and deeper aspirations of the women writers 	<ul style="list-style-type: none"> • CO1: Critically respond to literature from a feminist perspective • CO2: Differentiate how patriarchal notions pervade in the social and cultural scenario and how feminism exposes these notions • CO3: Identify how stereotypical representations of women were constructed and how these are subverted by women's writing • CO4: Analyse and engage in theoretical and scholarly debates about feminist fiction. • CO5: Know the developments, themes and narrative techniques of women's writings. 	regional developmental needs
NME-English for Career Examinations	NEN504	<ul style="list-style-type: none"> • To instill in students the confidence and skills necessary to face the challenges of a 	<ul style="list-style-type: none"> • students will be confident and possess the skills necessary to face the challenges of a competitive exam 	regional developmental needs

		<p>competitive exam</p> <ul style="list-style-type: none"> To equip them with English language skills to achieve success in the competitive examinations To give exposure and train them to succeed in group discussions and interviews 	<ul style="list-style-type: none"> They will acquire English language skills to achieve success in the competitive examinations They will be exposed to write competitive examinations They will be able to participate in Group discussions and interviews 	
Literary Criticism - II	EN617	<ul style="list-style-type: none"> To introduce to the students the world of Literary Criticism. To make the students to learn and understand critical analysis and interpretation. To make the students to learn and understand to evaluate literature. To make the students to learn and understand the examination of literary contexts, types, theme, trends, history, or principles To enable the students to understand and appreciate and to enhance proficiency in all kinds of literary work. 	<ul style="list-style-type: none"> understand Literary Criticism understand critical analysis and interpretation evaluate literature examine the literary contexts, types, theme, trends, history, or principles. appreciate and enhance and be proficient in all kinds of literary work. 	regional developmental needs
English Language Teaching	EN618	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	national developmental needs

		<p>the current trends and methods in ELT</p> <ul style="list-style-type: none"> • To enable the students to have hands on experience • To use the latest technology to acquire LSRW skills 	<p>currently in ELT</p> <ul style="list-style-type: none"> • CO4: Apply ELT methods in real time to smaller groups • CO5: Use the latest technology to acquire LSRW skills and be autonomous learners. 	
Epics in English	EN619	<ul style="list-style-type: none"> • To acquaint the students with the great epics of English Literature • To enrich learners with the types of Epic • To familiarize the conventions of Epic 	<ul style="list-style-type: none"> • CO1: Students can identify a variety of forms and genres of poetry from diverse cultures and historic periods. • CO2: They can understand the nature and development of the genre of ancient epic. • CO3: They can understand the internal structure and unity of the individual epics studied in the syllabus. • CO4: They can analyse the text with critical approaches and scholarly theories concerning these works. • CO5: They can understand the different historical contexts which produced the works. 	regional developmental needs
Translation: Theory and Practice	EN620	<ul style="list-style-type: none"> • To help the students understand how translation has shaped the knowledge of the world in the past and equip for the future. • To develop practical skills in translation • To develop an understanding of difference in the text type. 	<ul style="list-style-type: none"> • Use language properly including language patterning, textual organisation and the semiotics of verbal and non-verbal communication to translate texts. • Effectively employ their knowledge of the nuances of translation to translate texts from any regional language into English. • Translate literary texts 	regional developmental needs

Project- Journalism	EN621J	<ul style="list-style-type: none"> • To enable students to understand that writing for media is an art • To offer hands-on experience to the learners by empowering them to do real time projects • To familiarize students with the nuances of Journalism 	<ul style="list-style-type: none"> • Students will be able to understand that writing for media is an art • They will be able to offer hands-on experience to the learners by empowering them to do real time projects • They will be able to familiarize students with the nuances of Journalism. • Facilitate the students on technical writing • Draft their original work 	regional developmental needs
NME: Written Communication	NEN604	<ul style="list-style-type: none"> • To instill in students the confidence and skills necessary to face the challenges of a competitive exam • To equip them with English language skills to achieve success in the competitive examinations • To give exposure and train them to succeed in group discussions and interviews 	<ul style="list-style-type: none"> • students will be confident and possess the skills necessary to face the challenges of a competitive exam • They will acquire English language skills to achieve success in the competitive examinations • They will be exposed to write competitive examinations • They will be able to participate in Group discussions and interviews 	Local developmental needs

Name of the Programme: M.A. English

Programme Outcomes at Postgraduate Level

Programme will be able to:

PO1	Demonstrate intense knowledge in their discipline.
PO2	Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice.
PO3	Develop expertise in their field of study through projects and research activities.
PO4	Prepare them to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization.
PO5	Develop social and ethic responsibility in the transfer and management of knowledge.

Programme Specific Outcomes at Postgraduate Level

Programme will be able to:

PSO1	Compare and discuss the general characteristics and uniqueness of English literature emerging from different parts of the world, with an emphasis on rereading of Shakespeare.
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PSO2	Exhibit a deeper knowledge and understanding of English language with the emerging trends of grammatical nuances and equip oneself with the latest teaching and learning methods in English, leading to appropriate careers.
PSO3	Comprehend the recent trends in literature and criticism; choose an appropriate field of research, adhering to standard research practices.
PSO4	Discover the profound thoughts enshrined in the Indian indigenous literature and discuss the social, political and cultural issues reflected.
PSO5	Demonstrate one's command of English language through creative content writing, technical and academic writing and identify career opportunities in print and electronic media.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	WORLD CLASSICS IN TRANSLATION	EN718	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

			<p>understand and appreciate various stylistic devices used by writers across the world.</p> <ul style="list-style-type: none"> • To enable the learners to analyze the prescribed works 		
2	CHAUCER AND ELIZABETHAN AGE	EN719	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	ENGLISH LANGUAGE TEACHING WITH TECH PRACTICUM	EN720	<ul style="list-style-type: none"> • To equip learners with knowledge of various methods both evolving and being used in ELT. • To enable learners to adapt the 	<ul style="list-style-type: none"> • CO1: Know and be familiar with various methods and approaches (both the present and emerging) used in language teaching • CO2: Apply various methods in 	Local developmental needs

			<p>appropriate approach and method in ELT both at the secondary and tertiary level.</p> <ul style="list-style-type: none"> • To make the learners to have hands on training experience • To help learners to adapt to Online language teaching 	<p>an actual classroom or for a group to teach English language</p> <ul style="list-style-type: none"> • CO3: Tailor-make and demonstrate their own method of language teaching according to the evolving situation of a target group • CO4: Deploy technology in offline and online mode for language teaching • CO5: Use literature as a tool to teach English as a skill 	
4	LITERARY CRITICISM	EN721	<ul style="list-style-type: none"> • The course aims at facilitating basic knowledge in English critical tradition from the beginning to the Modernists. • To help the learners to prepare himself/herself to lay the foundation for learning to address the discursive and ideational aspects of literary texts. • To acquaint the learners with the major concepts and theories from Classical criticism to modern criticism. • To enhance learners' critical, analytical skills which will help them to study and appreciate literary texts in a better way. • To teach the learners to evaluate the texts rather critically 	<ul style="list-style-type: none"> • Know and remember the development of Criticism in literary field • Understand the concepts of various school of thoughts • Apply and test knowledge on literary productions • Describe, analyze, interpret and evaluate literature with the concepts of various schools of thought • Evaluate and apply critical thinking by the concepts of various school of thoughts 	Regional developmental needs

			applying Critical theories.		
5	ELECTIVE I: CHILDREN'S LITERATURE	EN722A	<ul style="list-style-type: none"> • To identify the various techniques and themes unique to Children's Literature • To understand the changing culture of the Children's world. • To analyze the perspectives of the young minds. • To acquaint learners with the major writers of Children's literature to help them to evaluate the literal qualities and the popular appeal of the books for children • To explore the category of Children's literature and its interaction and impact on children • To motivate the learners to instill the habit of reading in children and make them understand the importance of reading. 	<ul style="list-style-type: none"> • Understand various writers of Children's Literature. • Equip themselves with the knowledge about the category of Children's Literature and its impact on Children. • Trace out the themes and technique of Children's literature • Acquire knowledge about the world of Children • Evaluate the impact of Children's literature in Contemporary period. 	Local developmental needs
6	ELECTIVE I: SUBALTERN STUDIES	EN722B	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	
7	ELECTIVE I: WOMEN'S WRITING	EN722C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Evaluate the limitations of subaltern literature • 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
8	RESTORATION AND EIGHTEENTH CENTURY	EN818	<ul style="list-style-type: none"> • 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 drama in this period of high 	<ul style="list-style-type: none"> • 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

			<p>ideals combined with wit and language.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Analyze contemporary scholarship on 18th-century British literature. • Identify and evaluate the mechanisms of canonization. • Evaluate 18th-century British literature. • Engage in archival research. 	
9	CONTEMPORARY CRITICAL THEORY AND TERMS	EN819	<ul style="list-style-type: none"> • To introduce the learners to the current theoretical perspectives in contemporary literary studies • To help the learners in close reading of the literary texts in the light of current critical perspectives • To enhance learners' critical thinking scientifically • To enable to describe analyse, interpret, evaluate and compare and contrast the concepts of various school of thoughts. • To enable learners to appreciate a literary work scientifically. 	<ul style="list-style-type: none"> • know and remember the various 'Isms' and its concepts • demonstrate an understanding of all concepts of various theories in the literary field • apply and test knowledge on variety of various theories • describe, analyze, interpret, evaluate and compare and contrast their concepts of them • describe, analyze, interpret, evaluate and compare and contrast their concepts of them 	Regional developmental needs
10	NEW LITERATURES IN ENGLISH	EN820	<ul style="list-style-type: none"> • To make the learners to become familiar with the current scenario of literature in different parts of the world. 	<ul style="list-style-type: none"> • Appreciate all the literary works under New Literature in English as a part of English Literature. 	Regional

			<ul style="list-style-type: none"> • To encourage the learners to pursue their own interest in literature. • To introduce the learners of English Literature to a new breed of writing which talks about their oppressed feelings, ventilates their emotions, airs their protests, etc. • To enable them understand the concepts related to imperialism, colonialism, and the process of decolonization of the mind; • To familiarize them to the recent works of writers from different pockets of the world with an open mind, to understand and appreciate them. 	<ul style="list-style-type: none"> • Understand the global relevance, significance and resonance of New Literature in English today. • Analyse and evaluate the postcolonial aspects of the literary works • Appreciate the contribution of translation studies to New Literature in English. • Critically analyse the relevance of the works in the light of globalization. 	
11	RESEARCH METHODOLOGY	EN821	<ul style="list-style-type: none"> • To provide learners with paradigms and vocabularies for engaging in knowledge production • To help learners to be more self-aware and purposive researchers • To make the learners to be familiar with standard research processes • To enable them to conduct their research and present their findings in an effective manner in the field of literature. 	<ul style="list-style-type: none"> • Upon the completion of the course, the learners will be able: • To know what research is and its various types • To list out the sequence of processes involved in research • To search and read materials available related to a domain and write a review of it • To document the research materials following the mechanics of research writing • To apply both MLA and APA 	Regional developmental needs

			<ul style="list-style-type: none"> To make the learners to follow MLA & APA style in research writing 	<p>style in documenting resources cited</p> <ul style="list-style-type: none"> To present their research findings scientifically 	
12	ELECTIVE II: CULTURAL STUDIES	EN822A	<ul style="list-style-type: none"> To know about cultural studies as a branch of literature To understand the impact of culture on literature To comprehend the underlying terminologies related to cultural studies To know about the recent trends in cultural studies 	<ul style="list-style-type: none"> Know cultural studies as a branch of literature Understand the impact of culture on literature Comprehend the underlying terminologies related to cultural studies Know about the recent trends in cultural studies Create the literary pieces related to cultural studies 	Regional developmental needs
13	ELECTIVE II: GENDER AND MASS MEDIA	EN822B	<ul style="list-style-type: none"> To familiarize the learners with the notion of gender and its operation in society. To assist the learners to look at stereotypical representation of women in the media and equip them to critique them. To sustain critical thought regarding the role of gender and sexuality in media, in written form To be aware of ethics and laws related to gender and media Develop a greater appreciation of the media's cultural influence and ultimately, become more 	<ul style="list-style-type: none"> The learners can explore the relationship between women and media and understand women's images and representation in the media. They can comprehend and develop a plan in dealing with obstacles and challenges in media profession. Challenge the stereotypical notions related to women in media. Critically examine and analyze women's portrayal in different literary writings. They can apply gender and mass 	local developmental needs

			media literate and a productive citizen.	media ethics and laws in day today life.	
14	ELECTIVE II: POST-COLONIAL LITERATURE	EN822C	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
15	ROMANTIC AND VICTORIAN AGE	EN918	<ul style="list-style-type: none"> To provide an overview of the literary climate where the romantic sensibility finds an authentic voice touch and 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 	<ul style="list-style-type: none"> At the end of the course, the learners will be able to: Grasp the political and social backgrounds of the growth of the 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 	National and global developmental needs

			the romantic and Victorian spirit	<ul style="list-style-type: none"> Acquire a knowledge about the unique characteristics of the Romantic and Victorian society and its literary outputs 	
16	LANGUAGE AND LINGUISTICS	EN919	<ul style="list-style-type: none"> This course helps the learners to get introduced to scientific and systematic study of a language. It consists of the topics related to language and its history with the linguistic elements that makes a person to be systematic, specific and objective. To help the learners to internalize the system of rules and applications of the English Language. 	<ul style="list-style-type: none"> Know and remember the origin of Language Demonstrate the mechanism and the components of language Apply and test the components of language system with various linguistic theories Describe, analyze, the differences between the historical linguistics and the modern linguistics Evaluate various types of linguistics to develop critical thinking 	Regional
17	AMERICAN LITERATURE	EN920	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

			determination from the Novel		
18	ELECTIVE III: TEACHING COMMUNICATIVE ENGLISH FOR THE BEGINNERS	EN921A	<ul style="list-style-type: none"> To expose the learners systematically to the world of Literature with a view to crack eligibility examinations like NET/SET/JRF To create a comprehensive picture in the minds of the learners about the movements, genres, trends, of the world literatures To develop a thirst for specific information present in Literature 	<ul style="list-style-type: none"> CO1: Read and interpret the given text CO2: Converse effectively and appropriately within the given context CO3: Assess the effective use of vocabulary CO4: Develop needed skills to break the barriers of communication CO5: Employ LSRW skills in combination to learn, share information, ideas and results 	Local developmental needs
19	ELECTIVE III: MODERN ENGLISH GRAMMAR AND USAGE	EN921B	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
20	ELECTIVE III: ENGLISH FOR COMPETITIVE	EN921C	<ul style="list-style-type: none"> To expose the learners systematically to the world of Literature with a view to crack 	<ul style="list-style-type: none"> CO1: Identify prominent writers of various literary ages and movements 	Regional developmental needs

	EXAMINATIONS		<p>eligibility examinations like NET/SET/JRF</p> <ul style="list-style-type: none"> • To create a comprehensive picture in the minds of the learners about the movements, genres, trends, of the world literatures • To develop a thirst for specific information present in Literature 	<ul style="list-style-type: none"> • CO2: Trace the history of English literature based on movements, genres and recent trends • CO3: Infer any specific information in the world of literature • CO4: Reflect upon the literary characters and approaches • CO5: Annotate major literary works and awards 	
21	TWENTIETH CENTURY LITERATURE	EN1021	<ul style="list-style-type: none"> • To sensitize learners to the momentous changes in the 20th century, especially, literature • To enable them to understand experimental and innovative techniques used in literature • To make clear the idea that changes in human experience demand changes in mode of expression • The learners will be able to identify and understand the shift in the literary devices from the plot and structure of the text to the mode of narrative techniques. • It enables them to frame and apply the interdisciplinary perspectives to literature. 	<ul style="list-style-type: none"> • Upon the completion of the course, the learners will be able: • To understand the interdisciplinary nature of literary studies. • To understand the socio-cultural changes that influenced Literature during 20th Century. • To understand how the different modes of literary expression have influenced human life. • To gain knowledge about the changes in the use of literary devices and techniques. • Evaluate the reasons for the disintegration experienced by the writers in their works 	Regional developmental needs

22	SHAKESPEARE	EN1022	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
23	ECO-LITERATURE	EN1023	<ul style="list-style-type: none"> • To introduce the learners with an overall view of literature and ecological thinking with critical perspective. • To introduce the learners to some basic texts and concepts in this direction, recognizing the fundamental nature of the issues. It is intended to be multidisciplinary. • To give awareness to the learners on the role of literature in addressing contemporary issues such as environmental concerns. • To expose care and concern for the environment. • To advocate a more thoughtful and ecologically sensitive 	<ul style="list-style-type: none"> • know the relationship between Literature and Ecosystem • learn to critically appreciate literature and ecology • learning the role of literature in addressing contemporary issues regarding environmental concerns. • exposed to care and concern for the environment • be more thoughtful and ecologically sensitive towards the relationship between man and nature. 	Regional developmental needs

			relationship of man to nature.		
24	INDIAN LITERATURE IN ENGLISH	EN1024	<ul style="list-style-type: none"> • To acquaint students with knowledge of Indian writers and their works. • To help the students to have a broad look on Indian literature and to make them and estimate the diverse path and significance of Indian culture. • To make the students aware of social, political and cultural issues reflected in writing in English. □ • To elicit the various themes presented in Indian Literature. □ • □To familiarize the characteristics of Indian sensibility. □ 	<ul style="list-style-type: none"> • CO1: Identify the major works of Indian Literature • CO2: Analyse the representative literary texts of various periods and genres • CO3: Discuss the social, political and cultural issues reflected in Indian writing in English • CO4: Demonstrate an understanding of the various themes presented in Indian writing in English • CO5: Evaluate the characteristics of Indian sensibility with world literature 	Regional and national developmental needs
25	ELECTIVE IV: CONTENT WRITING	EN1025A	<ul style="list-style-type: none"> • To be familiar with the process of Content writing • To be aware of the common errors committed by ESL learners • To be well-versed with the mechanics of writing in English • To boost one's vocabulary • To learn to use the modern writing tools (Apps) • To enhance one's non-fictional writing skills 	<ul style="list-style-type: none"> • CO1: Comprehend the process of Content writing • CO2: Identity and analyse the common errors committed by ESL learners • CO3: Construct an error free sentences in English • CO4: Demonstrate the knowledge in using the correct vocabulary • CO5: Exhibit the use of modern writing tools (Apps) • CO6: Compose non-fictional 	Regional developmental needs

			<ul style="list-style-type: none"> To become familiar with standard business writing 	writing and standard business writing	
26	ELECTIVE – IV: ADVANCED ACADEMIC WRITING	EN1025B	<ul style="list-style-type: none"> To gain knowledge about Academic writing and it's nuances To develop the proficiency of the learners in writing English for academic purposes. To integrate the various skills and sub skills into meaningful writing activities To tap the critical thinking and synthesizing skills of the learners To enable them to write a scientific paper as a hands on practice experience 	<ul style="list-style-type: none"> CO1: Acquire knowledge about Academic writing and it's aspects in a theoretical way CO2: Use English for various academic purposes CO3: Gain knowledge to integrate the skills need to accomplish the writing activities CO4: Adapt the critical way of producing the information CO5: Write a scientific paper as an academic practice 	Regional developmental needs
27	ELECTIVE IV: TECHNICAL WRITING	EN1025C	<ul style="list-style-type: none"> To familiarize the learners with the history and significance of technical writing To design technical documents appropriate for specific audiences and writing situations To develop, interpret, and express ideas through oral and written communication To hone the learners with tools and techniques of technical writing To enhance the employability of the learners as good technical 	<ul style="list-style-type: none"> CO1: Acquire and learn the significance of technical writing CO2: Produce technical documents that are appropriate to audience, purpose, and genre CO3: Analyze the ethical responsibilities involved in technical writing CO4: Locate, evaluate, and incorporate pertinent information CO5: Apply conventions of technical documents to original compositions 	Local and regional developmental needs

			writers		
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- To make the learners to have hands on training experience

Name of the Programme: B. COM (CA)

Programme Outcomes Undergraduate Level

Undergraduates will be able to	
PO1	Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment
PO2	Pursue higher learning programmes and become entrepreneurs
PO3	Recognize moral and ethical values and be socially responsible citizens in the society
PO4	Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
PO5	Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings
PO6	Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
PO7	Demonstrate communication skills both oral and written in personal and academic pursuits

Programme Specific Outcomes at Undergraduate Level

PSO1	Graduates will be able to understand the concepts related to various aspects of commerce and computer applications in the real world situations and also to enrich the practical knowledge with practical exposures (Internship) in the field of commerce and computer applications to fulfill the industry requirements.
PSO2	Graduates will be able to get entrepreneurial skills and leadership skills in the functional areas of various businesses by gaining knowledge in various disciplines of Commerce, accounting, marketing, banking and taxation.

PSO3	Acquire the communicative skills, employment skills and knowledge on computerized accounting, management information system and programming languages in business.
PSO4	Graduates will obtain the ability to develop critical thinking, creativity and innovative ideas, demonstration skill in object oriented programming like; RDBMS, Programming with C and PHP and be able to develop software in Linux environments. They also have knowledge in web designing.
PSO5	Analyze and apply various ethical practice of commerce, accounting and computer applications tools to solve the real life business problems and be socially responsible citizens in the society

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	FINANCIAL ACCOUNTING – I	CC106	<ul style="list-style-type: none"> • To understand the fundamentals of accounts and basic concepts of accounting. • To educate the students about various subsidiary books. • To give an insight knowledge about single entry system. • To inculcate the knowledge on process of preparing Final Accounts with Adjustments. • To make the students aware about Depreciation methods. 	<ul style="list-style-type: none"> • On successful completion of this course, students will be able to • Know the basic accounting principles and accounting procedure • Understand the preparation of various subsidiary books in Accounting. • Analyze the preparation of Final Accounts with Adjustments. • Ascertain missing figure and profit or loss by preparing single entry method. • Evaluate the present asset value by preparing methods of Depreciation. 	National Needs
2	MODERN BANKING	CC107	<ul style="list-style-type: none"> • To impart knowledge on the basic functions and services of commercial banks • To make them understand the functions of RBI • To enrich students to learn about the principles of sound lending • To enhance the knowledge about negotiable instruments and the importance of crossing in the cheque. • To help the students to familiarize the modern banking services like e-banking, m-banking and internet banking 	<ul style="list-style-type: none"> • Acquire the knowledge on basic functions and services of Commercial banks • Understand the functions of RBI • Understand bankers and Customers relationship • Functions and Applications of negotiable instruments in banking transactions • Know and evaluate the impact of technology which are used in banks 	Regional Needs
3	OFFICE AUTOMATION	CC108	<ul style="list-style-type: none"> • To know the history of computers. • To understand the basic formatting features 	<ul style="list-style-type: none"> • Identify the history of computers and process involved in it 	Local Needs

			<p>in word processor.</p> <ul style="list-style-type: none"> To have knowledge on functions of spreadsheet. To understand the fundamental concepts of presentation. To explore knowledge on sending receiving mails. 	<ul style="list-style-type: none"> Generalize the basic formatting features in word processor. Prioritize knowledge on functions of spreadsheet. Explore the fundamental concepts of presentation. Organize the skills on sending and receiving mails. Validate the efficiency of using the application tools. 	
4	FINANCIAL ACCOUNTING – II	CC206	<ul style="list-style-type: none"> To educate the students branch and department accounting preparation process To give an insight knowledge of Hire Purchase and Installment Purchase Systems. To educate the students about Admission of the partners. To know the accounting procedure related with Retirement and Death of the partners. To make the students understand Insolvency of partners and Dissolutions of the firm. 	<ul style="list-style-type: none"> Know the concept of Branch and Department accounting Understand the Hire purchase and Installment purchase systems. Discover knowledge on new profit sharing ratio, revaluation of assets and liabilities, adjustment of goodwill at that time admission Summarizing the accounting problems and settlement procedure related to Retirement and Death of the partners and Analyze and prepare the Dissolution of the firm and Insolvency of partners using Garner vs Murry Method. 	National Needs
5	PRINCIPLES OF MARKETING	CC207	<ul style="list-style-type: none"> To make students to aware of marketing concepts and elements of marketing Mix To enhance the knowledge about Market segmentation, Marketing information system and Marketing Research To make the students to understand the 	<ul style="list-style-type: none"> Understand the importance of marketing and summarize role of marketing Mix Use the market information and Research to develop new marketing strategies for organizations 	National Needs

			<p>product classification and product life cycle</p> <ul style="list-style-type: none"> • To know the different types of pricing and promotional strategies in realistic marketing situations • To impart knowledge on technological marketing 	<ul style="list-style-type: none"> • Develop the product planning process through the concept of product life cycle. • Analyzing the different types of pricing strategy and deciding the promotion tools based on marketing environment. • learned about the technology in marketing and used in their day today life to buying goods and services 	
6	INTERNET CONCEPTS AND WEB DESIGN	CC208	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 using JavaScript, and implement simple JavaScript applications 	International Needs

				<p>through hands-on exercises.</p> <ul style="list-style-type: none"> Analyze Program Flow using JavaScript (JS), and Adding External Libraries to Enhance HTML Applications. 	
7	MERCANTILE LAW	CC310	<ul style="list-style-type: none"> To understand the Indian Contract law. To know the basic knowledge of Indemnity and Guarantee To impart knowledge on legal rules regarding Sale of Goods Act 1930. To give an insight knowledge about Contract of Agency. To inculcate the knowledge of Sale of Goods Sold Act 1930. 	<ul style="list-style-type: none"> Acquire the basic knowledge of essential of Indian contract Act. Apply concepts while undergoing the Contract of indemnity and Guarantee. Analyze the concepts of Law of Bailment and Pledge. Summarize the creation of agency and kinds of agents. Perceive the knowledge of sale, agreement to sell and hire purchase 	National Needs
8	CORPORATE ACCOUNTING – I	CC311	<ul style="list-style-type: none"> To gain comprehensive understanding of all aspects relating to corporate accounting. To develop a process for redemption of debentures and Preference shares. To develop the skills for preparation of final accounts according to new format. To calibrate the procedure involved in Amalgamation of companies. To facilitate the students to understand liquidation accounting 	<ul style="list-style-type: none"> Acquire the knowledge in company accounts such as meaning of a company, characteristics of a company, issue and forfeiture of shares Understand the accounting treatment of issue of debenture and redemption of preference shares Make detailed understanding on acquisition of business and preparation of final accounts according to new format Have knowledge on amalgamation and preparation of balance sheet of newly formed company Understand the calculation of 	National Needs

				liquidator's remuneration and preparation of liquidator's final statement accounting	
9	FUNDAMENTALS OF COST ACCOUNTING	CC312	<ul style="list-style-type: none"> To familiarize the students with basic concepts of Cost Accounting To make the students to understand about the purchase department and stock levels To apply the various methods of stores ledger in cost accounting and identify the suitable method for issue of materials. To analyse the various methods of determination of wages of employees and to identify the feasible method of computation of wage. To impart knowledge on the allocation and distribution of overhead 	<ul style="list-style-type: none"> Acquire knowledge of the basic concepts of cost and cost accounting Understand about the coding and classifications of materials and optimum level of material to be stored Assess the various methods of issue of stock under stores ledger account and identify the best method of issue of materials. Anticipate the amount to be payable to employees as wages and create the suitable method of incentive to workers. Apply the concept of allocation to overhead and its rationale on the cost of companies 	Regional Needs
10	PROGRAMMING WITH C	CC313	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Define appropriate solutions to problems in the field of computer science. Illustrate the solutions to the problems in the form of simple algorithms and flowcharts Apply various C programming language concepts and strategies to create and execute efficient and structured computer programs. Analyze and compile the programs to detect any errors, debug and 	National Needs

				<ul style="list-style-type: none"> correct the programs. • Test and perform critical evaluation of the program outcome to validate the program logic. • Integrate the concepts of control structures, functions and arrays to create more complex programming solutions. 	
11	CERTIFICATE COURSE I: STOCK MARKET OPERATION	CC315X	<ul style="list-style-type: none"> • The objective of this paper is to gain comprehensive understanding of all aspects relating to stock market. • Acquaint with the procedure of opening DEMAT account • To develop the skill to trading in stock market. • To make students to understand the procedures for the trading commodities and related investments. • To make students aware about online trading 	<ul style="list-style-type: none"> • Acquire the knowledge on stock market and its functions • Have knowledge on DEMAT account • Understand the functions of Indian stock exchanges • Analyze and Evaluate commodity exchange market • Explore knowledge on Online share trading 	National Needs
12	ENTREPRENEURS HIP DEVELOPMENT	CC410	<ul style="list-style-type: none"> • To understand the fundamental knowledge of Entrepreneurship. • To educate the students about MSME's • To familiarize the students about Lean Startup's. • To impart knowledge of government subsidies and incentives. • To know about social entrepreneurship 	<ul style="list-style-type: none"> • Acquire the functions and factors influencing Entrepreneurship. • Explain the nuance of MSME's Entrepreneurship. • Construct the concepts of Startup's and Incubation Centre. • Identifying support institutions and Government schemes and policies towards entrepreneurship. • Predict the require skill to successful social entrepreneurs. 	Regional Needs

13	CORPORATE ACCOUNTING – II	CC411	<ul style="list-style-type: none"> • To gain comprehensive understanding of calculation of goodwill and valuation of shares • Students able to learn about preparation of holding company accounts • To gain accounting knowledge in preparation of bank accounts • To know the procedures of preparation of life insurance company accounts • Students enable to prepare general insurance company accounts - fire and marine. 	<ul style="list-style-type: none"> • Understand, various methods for calculating goodwill and valuation of shares • Develop the application skills to preparation of consolidated balance sheet of holding companies, • Familiarize on bank accounts maintains • Understand the Life insurance company accounts • Gain confidence in preparation of general insurance company accounts independently. 	National Needs
14	COSTING METHODS AND TECHNIQUES	CC412	<ul style="list-style-type: none"> • To enlighten the students on the job, batch and contract costing. • To comprehend the methods of costing adopted in transport industries. • To enable the students to compute the process cost of manufacturing industries. • To acquire knowledge and practical skills for the application of Marginal Costing technique at various managerial decision-making condition. • To impart knowledge on standard costing, material and labour variances. 	<ul style="list-style-type: none"> • Understand the job, batch and contract costing and could estimate the cost of contract • Analyse the operational cost involved in transport sector and minimize it. • Apply the process costing technique and identify the cost of each process in manufacturing industries • Evaluate the managerial decisions like make or buy and etc, based on the concept of marginal costing • Understand about standard costing and compute material and labour variances 	Regional Needs
15	RELATIONAL DATABASE MANAGEMENT SYSTEM	CC414	<ul style="list-style-type: none"> • To understand the basic concepts of Databases Data Models. • To learn how to implement the query language database. 	<ul style="list-style-type: none"> • Discuss database concepts, applications, data models • Identify the tables and relationships between tables. 	International Needs

			<ul style="list-style-type: none"> • 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 data design and how it can be overcome. 	<ul style="list-style-type: none"> • 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. 	
16	CERTIFICATE COURSE II: TOURISM MARKETING	CC416X	<ul style="list-style-type: none"> • To provide a global and local perspective on tourism marketing • To build theoretical knowledge of the tourism marketing and related sectors • To understand about the behaviour of tourists. • To gain knowledge of tourism market segmentation. • To enable the students to be familiar with tourism planning process. 	<ul style="list-style-type: none"> • Aware about the basics of tourism and effects of tourism • Apply the tourism marketing of developed countries in India. • Understand about the behaviour of tourist • Analyse the tourism planning process and regional planning • Understand about the tourism market segmentation 	Local Needs
17	MANAGEMENT ACCOUNTING	CC512	<ul style="list-style-type: none"> • To equip the students to interpret financial statements with specific tools of management accounting. • To educates the students about financial ratio statement. • To give an insight knowledge about fund flow and cash flow statement. • To inculcate the knowledge on process of preparing budgetary control. • To make the students aware about capital budgeting. 	<ul style="list-style-type: none"> • Know the basic financial statement analysis. • Understand the preparation of Ratios from Financial Statements • Analyze the preparation of fund flow and cash flow statement as per AS 3. • Ascertain Zero base budgeting. • Evaluate the method of payback period and present value index. 	National Needs

18	INCOME TAX LAW AND PRACTICE - I	CC513A	<ul style="list-style-type: none"> • To enable the students to understand the basic provisions of Income Tax Law. • To impart knowledge of students on filing of return, income tax authorities and assessment procedure • To be familiar with the taxation of various components of salary and with the computation of taxable income from salary. • To enable the students to compute the taxable income on retirement salary. • To acquire knowledge on computation of taxable income from house property. 	<ul style="list-style-type: none"> • Apply the basic concepts of income tax to identify the residential status of person. • Understand about the assessment procedure and could file the income tax return • Evaluate the provisions of income tax on taxability of salary and create the components of salary with minimum taxability. • Apply the income tax provisions on computation of taxable income from salary on retirement • Apply the income tax provisions on computation of income from house property in real scenario. 	National Needs
19	E- COMMERCE	CC613B	<ul style="list-style-type: none"> • To understand the concept of Electronic Commerce. • To impart knowledge regarding E-Security and encrypted websites. • To give an insight knowledge about Electronic governance and E-Records. • To inculcate the knowledge about electronic payment system through online. • To enable the student to become familiar with the mechanism for conducting business transactions through electronic means 	<ul style="list-style-type: none"> • Acquire of technology used in E-Commerce business. • Explain the impact of vulnerability of E-commerce environment and attacking life hackings. • Construct the concepts of Offense and Cyber Crimes. • Identifying the methods of transfer money through online, Debit / Credit Card, Smart card, Mobile Application payments. • Summarize the problems and features of Online business-like G-Pay, Amazon, OLA, OYO, Swiggy, Pharmaesy, etc., 	National Needs

20	AUDITING	CC613C	<ul style="list-style-type: none"> • To gain the knowledge about objectives and functions of Auditing • Beware of classification of Audit • Identify the key skill required for Internal Audit • Students to learn the procedure of vouching and verification of information • To enable the students to aware about legal requirements of auditor's qualification rights and powers. 	<ul style="list-style-type: none"> • Students will get knowledge about the principles and techniques which are used in auditing • Understand the classification of audit • Be able to gain knowledge about internal Audit • Have knowledge about vouching and verification • Explore the knowledge on company audit and qualification of Auditor 	National Needs
21	COMPUTERIZED ACCOUNTING -I	CC514	<ul style="list-style-type: none"> • To enable the students to acquire basic knowledge on computer application in the field of Accounting with Tally Prime Software or Higher Version. • To know about creation of voucher. • To aware about Inventory creation. • To enable to acquire the purchase and sales order. • To know the budget and control. 	<ul style="list-style-type: none"> • Acquire the knowledge of company creation, select, alter, shut. • Create voucher types and steps to creation. • Construct the purchase and sales with GST entries. • Prepare the purchase order and sales order. • Design and practice about the Scenario Management Ratio Analysis. 	National Needs
22	COMPUTERIZED ACCOUNTING - I (PRACTICAL -VI)	PCC504	<ul style="list-style-type: none"> • To enable the students to acquire basic knowledge on computer application in the field of Accounting with Tally Prime. • To educate about pass the voucher with and without stock item. • To the students aware about Final Accounts. • To enable to acquire the knowledge of budget and control. • To know the scenario management and 	<ul style="list-style-type: none"> • Prepare the Trial Balance Account. • Create voucher for the accounting transaction with stock and without stock items. • Create the Final accounts; extract gross profit and net profit. • Prepare account for budget control. • practice the Scenario Management and Ratio Analysis. 	National Needs

			Ratio Analysis.		
23	COMPUTER ORGANIZATION	CC515	<ul style="list-style-type: none"> To know the fundamentals of a computer system. To understand the different types of number system. To understand the various types of memory and processor. To understand the classification of computer languages. To study the different kinds of input output device. 	<ul style="list-style-type: none"> Understand the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer. Solve problems using number systems Understand the various types of memory and processor. Analyze the types of input output devices connect the types of computer languages Evaluate the various types of computer languages 	Local needs
24	WEB PROGRAMMING USING PHP	CC516	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	International Needs

				<ul style="list-style-type: none"> • Create and maintain database using MySQL queries. • Create and maintain MySQL database from PHP 	
25	SELF STUDY PAPER: I 1.1 BUSINESS ORGANIZATIONS	CC518SP1	<ul style="list-style-type: none"> • To gain knowledge of Business Organization and its importance • To enable the students to be familiar with various types of business organisation. • To impart knowledge on establishment of industry • To understand the types and functions of stock exchanges in India. • To impart knowledge on trade associations and chamber of commerce 	<ul style="list-style-type: none"> • Analyse the social responsibility of business in real business world • Understand the forms of business organisation. • Aware about concept of establishment of industry and district industrial centre • Evaluate the functions of stock exchange • Understand about the functions of chamber of commerce 	Local Needs
26	SELF STUDY PAPER: I 1.2 OFFICE ADMINISTRATIONS	CC518SP2	<ul style="list-style-type: none"> • To introduce the students the functioning of modern office and latest information technologies in offices. • To expose the students in office supervision and accommodation • To understand on basics of office management and supervision • To be familiar in the field of information technologies related on their administration • To comprehend the basics of office management, indexing and office forms 	<ul style="list-style-type: none"> • Understand the basics of office management and supervision • Aware about the system of office and work simplification • Create an office with proper lay out, decoration and lighting • Understand the concept of systematic record management • Apply the modern communication techniques in Office. 	Regional Needs
27	SELF STUDY PAPER: I 1.3 BUSINESS MANAGEMENT	CC518SP3	<ul style="list-style-type: none"> • To familiarize students with the principles, functions and techniques of management • Explore knowledge on planning and use appropriate resources for decision-making. • To learn organisation structure and span of 	<ul style="list-style-type: none"> • Acquire the knowledge and skills to manage a business • Familiarize the planning and decision-making process in the organization 	National Needs

			<p>management</p> <ul style="list-style-type: none"> • Students will inculcate the types of leadership and theories of motivation • To study the system and process of effective controlling in the organization 	<ul style="list-style-type: none"> • Understand the structure of the organization and have knowledge to delegation of authority and responsibility • Demonstrate the ability to directing, leadership and communicate effectively • Evaluate the issues and formulate best control methods. 	
28	<p>NON-MAJOR ELECTIVE – 1: BASICS OF ACCOUNTING USING COMPUTERS (TALLY)</p>	NCC503	<ul style="list-style-type: none"> • To gain the knowledge about accounting software in the current industry. • To impart knowledge to the students on the added features on the latest version. • To expose the students on creation of groups and company in Tally • To understand on basics of accountings and books of accounts • To be familiar on the aspects of preparation of journal, ledger and etc. in Tally 	<ul style="list-style-type: none"> • Aware on software to be used in the field of accounting • Understand on computerized accounting packages with latest versions and its installation • Create a company and groups with various details • Understand the classification of accounts and various books of business • Apply the accounting rules in Tally by creating ledger, profit and loss account and other accounts. 	Regional Needs
29	<p>SUMMER INTERNSHIP AND MINI OBSERVATION REPORT</p>	CC518SI	<ul style="list-style-type: none"> • To expose students to industry practices and help them to face the challenges in this rapidly changing world, internship training is crucial. • The purpose of the Internship is to provide students with an authentic learning environment for integrated and holistic education. The work carried out by the student in the internship should be relevant to the areas of Accounting / Marketing / 	<ul style="list-style-type: none"> • Students acquire experiential learning. • Students gain working experience in an actual workplace environment. • Study integrate theory and practice, and to understand the limitations of their current knowledge. • Student aware to work in a team and to collaborate with people with diverse background 	Local Needs

			Finance / Investment/ Banking / Insurance/ Auditing & Taxation / Entrepreneurship		
30	HUMAN RESOURCE MANAGEMENT	CC612	<ul style="list-style-type: none"> To understand the basic perspective of Human Resource management and Strategic HRM To gain knowledge about human resource planning They will be able to design, implement and evaluate training programmes Demonstrate the ability to prepare a recruitment and selection strategy for a specific job To enable the students to be aware on the procedure of performance appraisal 	<ul style="list-style-type: none"> Students will be able to possess the skills required by today's HR professionals and the scopes in the field of HRM and SHRM Students are enabled make an appropriate Human Resource Planning Apply right recruitment and selection process in business scenario Analyze the training needs, apply the right training methods and evaluate the same Understand and evaluate the way in which appraising the performance of an employee 	National Needs
31	FINANCIAL MANAGEMENT	CC613	<ul style="list-style-type: none"> To introduce the basic concepts of Financial Management. To educates the students about financial planning. To give an insight knowledge about factors of capital structure. To inculcate the knowledge on cost of equity, debentures, preference share. To make the students aware about Working capital management. 	<ul style="list-style-type: none"> Know the fundamental source of short- and long-term finance. Understand the preparation of operating, financial and combined leverages. Analyze the preparation of capital structure theories (NI, NOI, Traditional, MM approach) Ascertain Methods of computation of Cost of Capital. Evaluate the method of Dividend Policy (Walter, Gordon and MM Model). 	National Needs

32	INCOME TAX LAW AND PRACTICE - II	CC614A	<ul style="list-style-type: none"> • To enable the students to compute taxable income from business and profession • To be familiar with the transfer of capital assets and computation of taxable amount of capital gain. • To impart knowledge of students on taxability of income from other source. • To acquire knowledge on adjustment of losses under various heads of income. • To enable the students to compute Total Income and Tax Liability of an Individual 	<ul style="list-style-type: none"> • Apply the provisions of income tax on computation of taxable income from business and profession in real cases. • Create the suitable investment portfolio based on provisions of exempted capital gain under section 54. • Understand the income tax provisions on taxability of other incomes • Apply the income tax provisions on adjustment of losses to minimize the taxable income of Assessee. • Compute the amount of taxable income and reduce the tax liability in legal ways by applying the concept of deductions, 	National Needs
33	INVESTMENT MANAGEMENT	CC614B	<ul style="list-style-type: none"> • To make the student to understand the concepts, objectives and various avenues of the investments. • Comprehend the functionalities of the financial market and financial institutions • Understand how securities are traded in the market • Provide a guide to the measurement and analysis of risk of financial investments • To help students develop a broad knowledge and understanding of portfolio management and investment analysis. 	<ul style="list-style-type: none"> • Aware on the various avenues of the investments • Understand the functioning of financial markets in India • Gain knowledge about stock market and role of SEBI • Demonstrate how risk is assessed • Construct optimal portfolios and its management 	Regional Needs
34	COMPANY LAW	CC614C	<ul style="list-style-type: none"> • To enable the students to understand the principles and procedures of company law 	<ul style="list-style-type: none"> • Acquire basic knowledge on company and basic documents on 	National Needs

			<ul style="list-style-type: none"> To impart basic knowledge of the provision of the companies act To expose on appointments and powers of directors and secretaries of company. To understand about the proceedings of meeting at company To be familiar with the types of winding of companies with the process. 	<ul style="list-style-type: none"> formation of company Understand the powers, rights and duties of directors and secretary of company Analyse the proceedings of various types of meeting at company with its norms Understand the basics of ordinary and special resolution Aware about the process and methods of winding of companies 	
35	SUBJECT SKILL: COMPUTERIZED ACCOUNTING - II	CC615	<ul style="list-style-type: none"> To know about payroll to employees with concern department. To give an insight knowledge of Cost center and Cost Category. To educate the students about multiple price level. To equip the students about TCS and TDS. To enable the students to acquire advance knowledge on computer application in the field of Accounting with Tally Prime Software or Higher Version. 	<ul style="list-style-type: none"> Create Payroll with basic pay, HRA, DA, TA. Explain the steps to prepare cost center, Cost Category and Bank Reconciliation Statement. Understand the multiple price level Create the report based on the TDS and TCS concept. Generate the accounting report and export the file. 	Local Needs
36	SUBJECT SKILL: COMPUTERIZED ACCOUNTING – II (PRACTICAL – VII)	PCC603	<ul style="list-style-type: none"> To enable the students to acquire knowledge about payroll. To educate about cost center and cost category. To the students aware about Interest calculation and multiple price level. To enable to acquire the knowledge of Bank Reconciliation. To know the TDS and TCS. 	<ul style="list-style-type: none"> Create the Payroll. Pass the entries of Cost center and Cost category. Calculate Interest Calculation. Prepare the Bank Reconciliation Statement. Create the report for the transactions of Tax collected at Source and Tax Deducted at Source. 	Local Needs

37	SELF STUDY PAPER – II 2.1 CUSTOMER RELATIONSHIP MANAGEMENT	CC518SP6	<ul style="list-style-type: none"> • To highlight the importance of customer expectations and customer satisfaction. • To high light the methods to retain customers in business and to develop a long-term relationship with customer through appropriate strategies. • To impart knowledge on customer life cycle • To enable the students to understand about customer centric marketing • To expose on customer retention Programmes and loyalty and reward point systems 	<ul style="list-style-type: none"> • Acquire basic concepts of Customer Relationship Management and customer’s expectations • Understand about customer profile and life cycle • Evaluate the customer centric marketing and understand the importance of bonding of customer relationship. • Understand the basics of customer detection and CRM strategies • Aware about the customer loyalty and reward programmes 	Regional Needs
38	MANAGEMENT INFORMATION SYSTEM	CC616	<ul style="list-style-type: none"> • To demonstrate effective communication with individuals, teams and large groups. • To demonstrate effective analytical and critical thinking skills. • To distinguish and analyze ethical problems that occurs in business and society. • To apply leadership skills and competencies in business situations. • To demonstrate an understanding of the major functional areas of Business. 		National Needs
39	SELF STUDY PAPER – II 2.2 SALES PROMOTIONS	CC518SP7	<ul style="list-style-type: none"> • To enable the students to acquire knowledge on sales promotion and its importance • To make students to aware about different tools of sales promotion • To impart knowledge on various techniques of sales promotion • Students enable to learn how to creating public relations 	<ul style="list-style-type: none"> • Students understand the sales promotion techniques • Have knowledge about tools of sales promotion • Apply the skills in marketing a product by using different process. • Understanding the necessity of creating public relations • Gain knowledge on ethical and 	Local Needs

			<ul style="list-style-type: none"> To know ethical and legal aspects of sales promotion 	unethical sales promotion	
40	SELF STUDY PAPER – II 2.3 BUSINESS ENVIRONMENT	CC518SP8	<ul style="list-style-type: none"> To enable the students to have an overview of Political, Social and Global environment of business To provide knowledge of the environment in which businesses operate, the economic environment To give students an understanding of the various constituents and its functions. To study the procedural aspects of various forms of Business Organizations and Social Responsibility of Business towards different groups Gain knowledge about the operation of different institutions and opportunities of global business environments. 	<ul style="list-style-type: none"> Familiarize the nature and scope of business environment and its components Understand the effects of government policy on the economic environment Have knowledge on social responsibility of business towards stakeholders Analyze the relationships between Government and political environment Make aware on the role of globalization, WTO and GATT 	Regional Needs
41	NON – MAJOR ELECTIVE – II: GENERAL COMMERCIAL KNOWLEDGE	NCC603	<ul style="list-style-type: none"> To enable the students to have general commercial knowledge To impart knowledge on joint stock companies and its management To gain basic knowledge on Trade, Commerce and Industry To understand about various business forms To acquire knowledge on preparing company agenda and minutes 	<ul style="list-style-type: none"> Have basic knowledge on Trade, Commerce and Industry Understand on various forms of business-like sole trade and partnership Aware about the company and types of co-operatives Understand the procedure of appointment of directors and their duties Familiar with proceedings of meetings of company. 	Local Needs

Name of the Programme: B Sc. Psychology

PROGRAMME OUTCOMES AT UNDERGRADUATE LEVEL

Undergraduates will be able to:

PO1: Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment

PO2: Pursue higher learning programmes and become entrepreneurs

PO3: Recognize moral and ethical values and be socially responsible citizens in the society

PO4: Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.

PO5: Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings

PO6: Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.

PO7: Demonstrate communication skills both oral and written in personal and academic pursuits.

V. PROGRAMME SPECIFIC OUTCOMES [PSO]

PSO1: Define major concepts in psychology and explain the theoretical perspectives of the fields in Psychology and Exhibit capability of demonstrating comprehensive knowledge of Psychology and understanding of one or more disciplines which form a part of the undergraduate programme of study.

PSO2: Developing necessary skills to be effective in his/her communicative skills and use effective and fluent written, oral and visual communication to convey ideas and concepts.

PSO3: Graduates will be motivated towards ethical and social responsibilities in this complex world.

PSO4: Ability to analyze and comprehend results using scientific psychological tools and apply them to understand persons or the social context under study

PSO5: Ability to work independently and do in-depth study of various concepts of Psychology through self-reflection and evaluation of one's strengths and weaknesses

PSO6: Capability to make use of the digital tools available to understand and apply them in investigations and problem solving.

PSO7: Ability to gain employment and be successful in their chosen occupation which benefits the recipients, the workforce, the community and themselves.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	GENERAL PSYCHOLOGY – I	SY101	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 • Interpret the theory of sensation. 	global developmental needs
2	BIOLOGICAL PSYCHOLOGY – I	SY102	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

			<p>dysfunction.</p> <ul style="list-style-type: none"> • To understand the process of neural communication. • To understand the influence of various hormones on behavior. 	<p>functions of the nervous system</p> <ul style="list-style-type: none"> • Demonstrate the structure and functions of brain • Illustrate the influence of various Hormones on behaviour 	
3	PRINCIPLES OF MANAGEMENT – (ALLIED - I)	ABA101	<ul style="list-style-type: none"> • To apply the concepts of management by the various management thinker. • To learn the concepts and competence of planning. • To acquire the knowledge of Organization and & staffing. • To understand the importance of effectiveness of Directing and Leadership. • To analyze the importance, process & types of controlling. • To importance of effectiveness of Directing and qualities. 	<ul style="list-style-type: none"> • Apply the concepts of management by the various management thinker. • Learn the concepts and competence of planning. • Acquire the knowledge of Organization and & staffing. • Understand the importance of effectiveness of Directing and Leadership. • Analyze the importance, process & types of controlling. • The importance of effectiveness of Directing and qualities. 	regional developmental needs
4	GENERAL PSYCHOLOGY - II	SY201	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

				<p>decision making process</p> <ul style="list-style-type: none"> • Interpret the concepts of conflicts and frustration. 	
5	BIOLOGICAL PSYCHOLOGY - II	SY202	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
6	MANAGING BEHAVIOR IN ORGANIZATION	ABA201	<ul style="list-style-type: none"> • To get the current knowledge about Organization. • To identify and learn the fundamental concepts of Organization behavior. • To make the students learn the application of the organization concepts. • To acquire the cross-cultural management concepts. • To acquire the knowledge about 	<ul style="list-style-type: none"> • Get the current knowledge about Organization. • Identify and learn the fundamental concepts of Organization behavior. • Make the students learn the application of the organization concepts. • Acquire the cross-cultural management concepts. • Acquire the knowledge about 	regional developmental needs

			<p>organizational change and Development.</p> <ul style="list-style-type: none"> To learn the organizational behavior and the culture of the organization in the present scenario. 	<p>organizational change and Development.</p> <ul style="list-style-type: none"> Learn the organizational behavior and the culture of the organization in the present scenario. 	
7	DEVELOPMENT PSYCHOLOGY - I	SY316	<ul style="list-style-type: none"> 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 and personality development 	<ul style="list-style-type: none"> 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 stages of socialization, family relations and personality development Describe the hazards in developmental stages. Identify the specific skills in childhood. 	global developmental needs
8	INTRODUCTION TO THEORIES OF PERSONALITIES	SY317	<ul style="list-style-type: none"> To relate the concepts, assessment, measurement and research methods pertaining to personality. To know the various psychoanalytic perspective of personality 	<ul style="list-style-type: none"> Describe the concepts, assessment, measurement and research methods pertaining to Personality Outline the various psychoanalytic perspectives of Personality 	global developmental needs

			<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	
9	STATISTICS IN PSYCHOLOGY	AM310D	<ul style="list-style-type: none"> • To understand basic concepts of a random variable and its probability distributions. • To graphically represent and calculate mean, median and mode. • To perform hypothesis testing and problems on inferential statistics • To outline of normal distribution, skewness and kurtosis • To define non parametric statistical test and find Spearman rank correction coefficient • To discrete and Continuous Variables 	<ul style="list-style-type: none"> • Understand basic concepts of a random variable and its probability distributions. • Graphically represent and calculate mean, median and mode. • Perform hypothesis testing and problems on inferential statistics • Outline of normal distribution, skewness and kurtosis • Define non parametric statistical test and find Spearman rank correction coefficient • Discrete and Continuous Variables 	National developmental needs
10	DEVELOPMENTAL PSYCHOLOGY - II	SY416	<ul style="list-style-type: none"> • To know the developmental process of puberty and 	<ul style="list-style-type: none"> • Explain the developmental process of puberty and 	global developmental

			<p>adolescence.</p> <ul style="list-style-type: none"> • To analyze various developmental process of young adulthood • 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 	<p>adolescence</p> <ul style="list-style-type: none"> • Relate the various development process of young adulthood • 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 	needs
11	ABNORMAL PSYCHOLOGY - I	SY417	<ul style="list-style-type: none"> • To know about abnormal behavior, DSM-V and ICD- 11 • To relate between normal and abnormal behavior • To explain about the clinical features and causes of neuro developmental disorders • To know the clinical features and causal factors of anxiety related disorder • To understand clinical features and causal factors of somatic and dissociative disorder 	<ul style="list-style-type: none"> • Gain knowledge about abnormal behavior, DSM-V and ICD- 11 • Distinguish between normal & abnormal behavior and outline the historical background and need for classification • Identify clinical features and causes of neurodevelopmental disorder, conduct disorder & neuro-cognitive disorder • Explain the clinical features and causal factors of anxiety related disorder • Outline the clinical features and causal factors of somatic and dissociative disorder • Demonstrate the models of abnormality. 	regional developmental needs

				<ul style="list-style-type: none"> • Explain the somatic disorder and disassociate disorder. 	
12	BUSINESS COMMUNICATION	ABA401	<ul style="list-style-type: none"> • Imbibe meaning of Business Communication and the general principles of communication. • Learn the mechanical structure of letters and drafting of others forms of communications. • Illustrate the mechanism of writing business reports. • Draft different kinds of business letters and communications. • Gain knowledge about Trade Letter, Export Letter, Letters of Application and Report Writing. 	<ul style="list-style-type: none"> • Imbibe meaning of Business Communication and the general principles of communication. • Learn the mechanical structure of letters and drafting of others forms of communications. • Illustrate the mechanism of writing business reports. • Explain the clinical features and causal factors of anxiety related disorder • Gain knowledge about Trade Letter, Export Letter, Letters of Application and Report Writing. • Draft different kinds of business letters and communications. 	Local developmental needs
13	SUMMER INTERNSHIP (SI-2)	SY419SI	<ul style="list-style-type: none"> • Foster capability in different fields of psychology by being in group environments. • Increment the involvement in multiculturalism and variety, creating information on moral practices in the different areas of brain science. • Improved your ability to maintain professional relationships and provide direct services like counseling, psychotherapy, and crisis 	<ul style="list-style-type: none"> • Transmit the theoretical and practical knowledge of psychology by being in social settings. • Evaluate the skills, values, ideas and experience that are opted during in the various domains of the Psychological related organizations. • Starts applying the gained knowledge, in the field of various sectors of Psychology. • Interpret the link between theories 	local developmental needs

			<p>intervention.</p> <ul style="list-style-type: none"> • Aids in the beginning application of theoretical knowledge during the practical experience. • Look for a valuable educational opportunity that helps students choose their preferred psychology practice areas. 	<p>and practice.</p> <ul style="list-style-type: none"> • Connect the structure and functions of the various fields of Psychology • Applies specific psychological concepts, theoretical perspectives, empirical finding and historical trends in psychology. • Create career platform for interested domains in psychology 	
14	ABNORMAL PSYCHOLOGY – II	SY501	<ul style="list-style-type: none"> • To describe about the causes of mood disorder and treatment • To know the clinical features causal factor and treatment of schizophrenia • To explain the types, causes and treatment of personality disorders • To introduce types, causal and treatment of substance related disorder • To gain knowledge about the prevention and learn the different models of therapies. 	<ul style="list-style-type: none"> • Explain the causes of mood disorder and treatment • Outline the clinical feature, causal factor and treatment of schizophrenia and other psychotic disorder. • Gain knowledge about the types, causes and treatment of personality disorders. • Explain the types, causal and treatment of substance related disorder • Identify the different types of prevention and summarize the different models of therapies. • Explain about suicide and its causes. • Illustrate the prevention and treatment of disorders. 	regional developmental needs
15	SOCIAL PSYCHOLOGY - I	SY502	<ul style="list-style-type: none"> • To learn the nature, history, principles and scope of social 	<ul style="list-style-type: none"> • Explain the nature, history, principles and scope of social 	national developmental

			<p>psychology</p> <ul style="list-style-type: none"> • To understand the significance of self- presentation behaviors • To classify the interconnections between attitude and behavior • To understand the dynamics behind conformity, compliance and obedience • To know about the social belief and judgement. 	<p>psychology and methods used in social psychology research</p> <ul style="list-style-type: none"> • Demonstrate the significance of self- presentation behaviors in relation to the multifaceted development of the self • Elaborate on the interconnections between attitude and behavior • Compare and contrast the dynamics behind conformity, compliance and obedience • Summarize the conditions promoting helping behavior • Discover the attitudes, self presentation and self-justification. • Identify the altruism and pro social behavior. 	needs
16	INTRODUCTION TO RESEARCH METHODOLOGY	SY503	<ul style="list-style-type: none"> • To describe the importance and process of research • To classify research problems and formulate hypothesis • To compare and contrast the different types of sampling • To elaborate on the methods used in data collection • To demonstrate an understanding of writing a search report 	<ul style="list-style-type: none"> • Explain the needs, objectives, importance, problem and process of research based on review of literature • Identify research problems and formulate hypothesis • Compare and contrast the different types of sampling • Elaborate on the methods used in data collection • Illustrate diagrammatic and graphic representation of data. • Demonstrate an understanding of writing a research report 	national developmental needs

				<ul style="list-style-type: none"> • Examine the process of research methodology by undertaking a research 	
17	EXPERIMENTAL PSYCHOLOGY- I	PSY501	<ul style="list-style-type: none"> • To learn the psychological testing and purposes. • To know the need for the psychological testing or experiments. • To learn practical exposure to various psychological concepts. • To conduct psychological experiments to measure individual's Attention, Perception, Learning, Motivation & Emotion, Psychomotor abilities and Intelligence • To Assess, diagnose and interpret the tests and its related results 	<ul style="list-style-type: none"> • Have knowledge about psychological testing and purposes. • Identify the need for the psychological testing or experiments. • Review the concepts of psychology through the mediums of the experiments. • Enhance the experimental knowledge of psychology • Gain practical exposure to various psychological concepts such as Attention, Perception, Learning, Motivation & Emotion, Psychomotor abilities and Intelligence Tests. • Conduct psychological experiments to measure individual's Attention, Perception, Learning, Motivation & Emotion, Psychomotor abilities and Intelligence • Assess, diagnose and interpret the tests and its related results 	regional developmental needs

18	POSITIVE PSYCHOLOGY- (ELECTIVE I)	SY504A	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
19	FORENSIC PSYCHOLOGY	SY504B	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

				<p>profile of violence</p> <ul style="list-style-type: none"> Summarize the characteristics of violent offenders and their related behaviors. 	
20	BEHAVIOUR MODIFICATION- (ELECTIVE I)	SY504C	<ul style="list-style-type: none"> To know the basic concepts of behavior modification To learn the basic principles of behavior modification To understand the measurement of behavior and behavior change To transmit knowledge and develop skills needed for applying behavior modification techniques. To understand the cognitive behavior modification 	<ul style="list-style-type: none"> Explain the basic concepts of behavior modification Demonstrate the basic principles of behavior modification Use the reward system for modifying behavior Identify the measurement of behavior and behavior change Develop knowledge and skills needed for applying behavior modification techniques. Describe the cognitive behavior modification Use therapies for changing their behavior 	national developmental needs
21	STRESS MANAGEMENT- (NON-MAJOR ELECTIVE I)	NSY501	<ul style="list-style-type: none"> To understand the basic concepts related to stress To know about the stress and its relationship to body and emotion To learn about stress and its relationship to mind and spirit To relate teach and practice coping strategies To understand the approaches of stress 	<ul style="list-style-type: none"> Explain the basic concepts related to stress Define stress and its relationship to body and emotion Comprehend stress and its relationship to mind and spirit Demonstrate coping strategies Illustrate Relaxation techniques Compare the healthy and unhealthy emotion Gain knowledge on relaxation techniques. 	Local developmental needs

22	HEALTH PSYCHOLOGY	SY601	<ul style="list-style-type: none"> • To know the basics of Health Psychology and health behavior • To understand the changing health habits using theoretical models • To gain the knowledge about the chronic illness and pain • To summarize the concept of stress and coping • To understand the Promoting health behavior 	<ul style="list-style-type: none"> • Explain the basics of Health Psychology and health behavior • Illustrate the changing health habits using theoretical models • Gain the knowledge about the chronic illness and pain • Use techniques and psychosocial interventions for illness and pain • Summarize the concept of stress and coping • Explain theoretical models and its contributions • Express the need to promote health behavior 	national developmental needs
23	SOCIAL PSYCHOLOGY- II	SY602	<ul style="list-style-type: none"> • To get introduced to the theories of persuasion • To learn about the group behaviors in relation to individual's performance • To know about the nature, sources and consequences of prejudice • To understand the theories of aggression and strategies to regulate aggression . • To know the dynamics of intimate relationships in relation to internal and external sources of attraction 	<ul style="list-style-type: none"> • Comprehend the theories of persuasion and illustrate the factors in resisting persuasion • Explain the influence of various group behaviors in relation to individual's performance • Outline the nature, sources and consequences of prejudice and illustrate methods to counteract effects of prejudice • Summarize the theories of aggression and strategies to regulate aggression • Identify the dynamics of intimate relationships in relation to internal and external sources of attraction. • Define the concept of aggression 	regional developmental needs

				<p>and its type</p> <ul style="list-style-type: none"> • Classify the love, liking and close relationship 	
24	GUIDANCE AND COUNSELLING PSYCHOLOGY	SY603	<ul style="list-style-type: none"> • To know the basics of Counseling and Guidance • To learn the different approaches to counselling and its Process • To gain the knowledge about the Psychological testing and Diagnosis methods • To acquire knowledge about qualities and responsibilities of counsellor and ethical consideration • To understand the Special areas in counselling 	<ul style="list-style-type: none"> • Explain the basics of Counselling and Guidance • Compare the different approaches to counselling and its Process • Develop and acquire skills in problem solving and decision making • Gain the knowledge about the Psychological testing and Diagnosis methods • Implement the applications of various psychological tests • Acquire knowledge about qualities and responsibilities of counsellor and ethical consideration • Identify the Special areas in counselling 	regional developmental needs
25	SPORTS PSYCHOLOGY- (ELECTIVE- II)	SY604A	<ul style="list-style-type: none"> • To learn the need, importance and research methods in sports psychology • To understand and apply psychological techniques and theories. • To understand the nature, measurement of attitude towards sports behavior • To classify various abilities and 	<ul style="list-style-type: none"> • Explain the need, importance and research methods in sports psychology • Apply psychological techniques and theories. • Relate physical activity and mental health • Discuss the nature, measurement of attitude towards sports behavior • Develop physical activity and 	national developmental needs

			<p>skills</p> <ul style="list-style-type: none"> To explain the prevalence, etiology and intervention of alcohol and drug use among athletes 	<p>psychological principles of human performance</p> <ul style="list-style-type: none"> Classify various abilities and skills required for sports person Explain the prevalence, etiology and intervention of alcohol and drug use among athletes 	
26	HUMAN RESOURSCCE MANAGEMENT- (ELECTIVE- II)	SY604B	<ul style="list-style-type: none"> To learn the basic concepts of human resource management To understand the need of job analysis in relation to Human Resource Planning and Recruiting To learn strategies for analyze training needs and developing employees To explain the techniques of performance appraisal To understand the importance of Employee motivation in organization 	<ul style="list-style-type: none"> Outline the basic concepts of human resource management Identify the need of job analysis in relation to Human Resource Planning and Recruiting List strategies for analyze training needs and developing employees Explain the techniques of performance appraisal Examine current issues, trends, practices, and processes in human resource management Relate the importance of Employee motivation in organization Acquire knowledge in managing the workforce of the organization 	national developmental needs
27	ENVIRONMENTAL PSYCHOLOGY- (ELECTIVE- II)	SY604C	<ul style="list-style-type: none"> To learn the basic concepts of environmental psychology and research methods in environmental psychology To understand the ecology and development To describe the environmental 	<ul style="list-style-type: none"> Explain the basic concepts of environmental psychology and research methods in environmental psychology Relate the ecology and development Implement the various theoretical 	regional developmental needs

			<p>perception and effect of environment on behavior</p> <ul style="list-style-type: none"> • To know the features and effects of crowding on animals and human beings • To explain the changing behavior to save the environment 	<p>concepts</p> <ul style="list-style-type: none"> • Describe the environmental perception and effect of environment on behavior • Identify and analyze environmental problems as well as the risks associated with these problems • Relate the features and effects of crowding on animals and human beings • Explain the changing behavior to save the environment 	
28	EXPERIMENTAL PSYCHOLOGY II- (PRACTICALS)	PSY601	<ul style="list-style-type: none"> • To learn the need for the psychological testing or experiments. • To analyze and apply the understanding of psychological testing • To gain practical exposure to various psychological concepts • To assess, diagnose and interpret the tests and its related results • To interpret and assess the role of psychological testing in various field 	<ul style="list-style-type: none"> • Have knowledge about psychological testing and purposes. • Identify the need for the psychological testing or experiments. • Analyze and apply the understanding of psychological testing • Gain practical exposure to various psychological concepts such as Personality, Aptitude, Interest, Achievement tests, Stress and coping, Attitudes and behavior and Creativity • Conduct psychological experiments to measure individual's Personality, Aptitude, Interest, Achievement tests, Stress 	regional developmental needs

				<p>and coping, Attitudes and behavior and Creativity</p> <ul style="list-style-type: none"> • Assess, diagnose and interpret the tests and its related results • Interpret and assess the role of psychological testing in various field 	
29	PSYCHOLOGY OF INTERPERSONAL RELATIONSHIP (NON-MAJOR ELECTIVE -II)	NSY601	<ul style="list-style-type: none"> • To learn about self and attitudes • To comprehend the difference between stereotyping, prejudice and discrimination. • To know the concepts of interpersonal attraction and pro social behavior. • To summarize aggression and social influence. • To promote helping behavior. 	<ul style="list-style-type: none"> • Describe about self and attitudes • Comprehend the difference between stereotyping, prejudice and discrimination. • Define the concepts of interpersonal attraction and pro social behavior. • Explain how interacting with diverse individuals can enhance self-awareness • Summarize about aggression and social influence. • Compile the importance of the helping behavior. • Describe the value of interpersonal relationships and skills 	Local developmental needs
30	RESEARCH PROJECT	SY605J	<ul style="list-style-type: none"> • To identify areas in Psychology in which they have strong interests • To understand use of relevant review of literature to the research project. • To understand and apply an 	<ul style="list-style-type: none"> • Identify areas in Psychology in which they have strong interests • Gain research methodology knowledge by undertaking a research project. • Relate use of relevant review of literature to the research project. 	national developmental needs

			<p>appropriate techniques or research methodology</p> <ul style="list-style-type: none">• To acquire the skills of undertaking a research project.• To produce final dissertation outcomes of a high professional standard	<ul style="list-style-type: none">• Apply an appropriate techniques or research methodology• Acquire the skills of undertaking a research project.• Examine the scope of statistics.• Demonstrate diagrammatic and graphic representation of data.	
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Name of the Programme: M Sc. Counselling Psychology

Programme Outcomes at Postgraduate Level

Postgraduates will be able to

PO1: Demonstrate intense knowledge in their discipline

PO2: Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice

PO3: Develop expertise in their field of study through projects and research activities

PO4: Prepare them to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization

PO5: Develop social and ethical responsibility in the transfer and management of knowledge.

Program Specific Outcomes (PSOs)

PSO1: Understand the nature and basic principles of counselling psychology and have an in depth understanding of related psychological theories and concepts.

PSO2: Applying the educational, therapeutic, psycho social and vocational interventions for individuals, families, groups, organizations and communities.

PSO3: Analyse, evaluate and practice the dynamics behind emotional, intellectual, social and spiritual wellbeing.

PSO4: Develop scientific inquiry and critical thinking in the process of understanding human behaviour and mental process.

PSO5: Assimilate the nature and reasons of human behaviour with reference to one's environment upholding professional ethics, values and social responsibility to attain a better and more sustainable future.

PSO6: Demonstrate skills of leadership, creativity, and social sensitivity to recognise the needs of the community and become active agents of change.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	INTRODUCTION TO PSYCHOLOGY (FC-1)	MSY130T	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	global developmental needs

			memory.	memory.	
3	LIFE-SPAN PSYCHOLOGY (MC-1)	MSY132T	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Use technical terminology related to biological psychology • 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. • Understand the concept and process of human development across the life-span. 	global developmental needs
4	INTRODUCTION TO COUNSELLING (MC-2)	MSY133T	<ul style="list-style-type: none"> • To introduce the students to counselling. • To understand the helping relationship and process in counselling. • To learn the skills and techniques in counselling. • To understand about counselling theories and therapy • To instruct them about the basic ethics in counselling 	<ul style="list-style-type: none"> • Outline the meaning and nature of counselling. • Illustrate various stages of counselling process. • Evaluating verbal and non-verbal communication in counselling. • Analyze various skills required in counselling. • Appraise the dynamics of Counsellor – Client interaction. • Develop an understanding of basic 	national developmental needs

				concepts processes and techniques of counselling.	
5	PSYCHOLOGICAL TESTING (SK-1)	MSY134S	<ul style="list-style-type: none"> • Offer training administer and interpret Psychological Tests • Comprehend the relevance and usefulness of various psychological tests • Offer training in planning for therapy sessions • Teach the application of tests in clinical and non clinical set up • Develop self awareness using the psychological tests 	<ul style="list-style-type: none"> • Demonstrate competence in administering, scoring and interpreting the psychological tests. • Identify the relevant tests to be used for specific counselling needs • Infer test reports for planning counselling and therapy sessions • Understand oneself and develop self awareness through the usage of psychological tests. • Apply the tests in counselling set up for clinical, non-clinical, literate and illiterate population • Learn to write report and completing the psychological tests. 	regional developmental needs
6	FIELD PRACTICUM-I (FP-1)	MSY135F	<ul style="list-style-type: none"> • To help students develop counselling skills in applied settings. • To acquire the skills in Ice-breaking and Team building training. • To co-ordinate effectively with their supervisors at the counselling centre and the department. • To conceptualize the client's 	<ul style="list-style-type: none"> • Apply counselling skills in applied settings. • Identify the relevant tests to be used for specific counselling needs. • Analyze the skills and therapies offered in counselling centres for various issues. • Understand usefulness of counselling skills and techniques. • Write verbatim, draw genogram 	local developmental needs

			<p>concerns, demonstrate and apply counselling skills and write a report.</p> <ul style="list-style-type: none"> To familiarize with basic psychological tests. 	<p>and write psychological test reports.</p> <ul style="list-style-type: none"> Identify various areas of counselling. 	
7	RESEARCH METHODOLOGY & STATISTICS (MC-3)	MSY230T	<ul style="list-style-type: none"> Explain the basic concepts related to research methodology and statistical applications. Comprehend research design and formulating hypothesis in research Describe sampling techniques and report writing in the research Expose to the different scales of measurements and various statistical application Teach the usage quantitative techniques in SPSS 	<ul style="list-style-type: none"> Understand the concept and knowledge about research methodology and statistical applications. Analyse the research design and formulating hypothesis in research. Acquire the skill of adopting the sampling techniques and report writing in the research Analyse the scales of measurements and various statistical application. Discuss the quantitative research Apply the quantitative techniques in SPSS 	national developmental needs
8	PSYCHOPATHOLOG Y-I (MC-4)	MSY231T	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	global developmental needs

			<ul style="list-style-type: none"> To understand the etiological factors of various mental disorders 	<p>psychological disorders.</p> <ul style="list-style-type: none"> Understanding of the various psychological disorders and their treatment 	
9	THEORIES OF PERSONALITY (MC-5)	MSY232T	<ul style="list-style-type: none"> 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 different personalities. 	<ul style="list-style-type: none"> 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 personality 	global developmental needs
10	PSYCHOTHERAPIES (MC-6)	MSY233T	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

11	FIELD PRACTICUM – II (FP-2)	MSY234F	<ul style="list-style-type: none"> • Apply theoretical knowledge in the counselling field. • Understand the functions and activities of field place organization. • Teach students to administer psychological tests in counselling • Offer a comprehensive view of various therapeutic practices. • Educate the student to create intervention strategy 	<ul style="list-style-type: none"> • Know to practice counselling skills in diverse settings. • Write counselling report, case study and psychological assessment report. • Evaluate the different the techniques of counselling that they learn during field practicum. • Analyse the link between theory and practice • Administer psychological tests in counselling. • Create intervention plans in counselling set up 	local developmental needs
12	SUMMER INTERNSHIP (SI-1)	MSY235F	<ul style="list-style-type: none"> • Develop competency in a various domains of psychology by being in a social settings. • Increase the experience with multiculturalism and diversity, developing knowledge of ethical practices in the various domains of psychology. • Learn to maintain professional relationship and became more competent in providing direct services, such as counseling, psychotherapy and crisis intervention. • Helps to start applying a theoretical knowledge in the practical exposure. 	<ul style="list-style-type: none"> • Transmit the theoretical and practical knowledge of psychology by being in social settings. • Evaluate the skills, values, ideas and experience that are opted during in the various domains of the Psychological related organizations. • Starts applying the gained knowledge, in the field of various • Sectors of Psychology. • Interpret the link between theories and practice. • Connect the structure and functions of the various fields of Psychology 	local developmental needs

			<ul style="list-style-type: none"> • Find a meaningful educational opportunity that helps student to decide their preferred areas of practice in the psychology. 	<ul style="list-style-type: none"> • Applies specific psychological concepts, theoretical perspectives, empirical finding and historical trends in psychology. 	
13	SOCIAL PSYCHOLOGY (MC-8)	MSY331T	<ul style="list-style-type: none"> • Offer basic knowledge in social psychology. • Understand social perception, attitudes and stereotyping. • Analyse the impact of attitude and its related concepts. • Interpret the difference between stereotyping, prejudice and discrimination. • Assess the role of the dimensions related to interpersonal relationship and social influence. 	<ul style="list-style-type: none"> • Describe the basic concepts and theories in Social Psychology. • Comprehend the concepts related to self, social cognition and social perception. • Illustrate the impact of attitude in an individual. • Comprehend the difference between Stereotyping, Prejudice and Discrimination. • Understand and appraise the determinants related to interpersonal relationship. • Critically analyse and evaluate the various dimensions of social influence. 	national developmental needs
14	SCHOOL COUNSELLING (MC-9)	MSY332T	<ul style="list-style-type: none"> • Equip students with basic concepts related to school counselling and guidance • Comprehend the problems of children in educational settings. • Educate the students with the knowledge regarding school counselling programs • Offer information regarding adolescents and their problems • Teach students to handle social 	<ul style="list-style-type: none"> • Describe the basic concepts related to school counselling and guidance • Understand the problems of children in educational settings • Gain knowledge regarding school counselling programs • Appraise the school counselling program, its related objective, process and instruments. • Apply the acquired skills related 	local developmental needs

			and personal problems	to exceptional children in school setting	
15	HUMAN RIGHTS AND REHABILITATION (MC-10)	MSY333T	<ul style="list-style-type: none"> To understand the nature and extent of problems faced by specific categories of people who badly require safe shelter and rehabilitation. To get knowledge about the government response toward rescue, intervention and rehabilitation for people who require immediate attention. To gain knowledge on human rights in India and understand the contemporary issues of human rights. To understand the role of psychologists in intervention and rehabilitation of street children. To gain knowledge about addressing psychological trauma and arrangement of safe shelter 	<ul style="list-style-type: none"> Connect with various issues of adolescents and the determinants Develop expertise in the field of human rights and rehabilitation. Discover skills in the field of human rights and government response toward rescue, intervention and rehabilitation. Identify issues and problems relating to the realization of human rights. Analyze the role of psychologists in helping street children. Recognize the impact of psychological trauma on individuals, families, and communities and arrangement of rehabilitation services. Develop positive parents-child relationship in the family to promote safety. 	national developmental needs
16	BEHAVIOUR MODIFICATON (ME-1)	MSY334A	<ul style="list-style-type: none"> To make the students aware of the basic concepts of behaviour modification To transmit knowledge and develop skills needed for applying behavior modification 	<ul style="list-style-type: none"> Understand the concept of behaviour modification and its applications. Applying a behaviour modification program to shape or change behaviour. 	regional developmental needs

			<p>techniques.</p> <ul style="list-style-type: none"> • To pass on knowledge and develop skills towards self-development. • To use the techniques to increase desirable behaviour and decrease undesirable behavior • To apply behaviour therapy in clinical setup 	<ul style="list-style-type: none"> • Develop skills and techniques needed for modification of behaviour and self-development. • Use behaviour modification techniques to increase acceptable behaviour and decrease misbehaviour. • Identify and diagnose different psychological disorders and apply the different treatment programs. • Investigate the social and cultural influences on human behaviour. 	
17	<p>TRAINING AND DEVELOPMENT (ME-1)</p>	MSY334B	<ul style="list-style-type: none"> • Teach basic concepts related to training and development • Equip students with tools to evaluate the needs of the employees • Expose students to the various training methods • Understand the issues related to training and assessment. • Create their own training program 	<ul style="list-style-type: none"> • Describe the concept of training and development. • Assess the needs (Skill and competency level)of the employees • Compare and contrast the various training methods. • Summarise the practical issues related to employee training and development • Create modules for personal and interpersonal trainings • Comprehend the event and use appropriate evaluation tools 	national developmental needs
18	<p>HUMAN RESOURCE DEVELOPMENT (ME-1)</p>	MSY334C	<ul style="list-style-type: none"> • Gain knowledge about human resource development. • Understand the approaches and activities of human resource development. 	<ul style="list-style-type: none"> • Describe the human resource development process and how human resource needs are determined • Comprehend the approaches and 	national developmental needs

			<ul style="list-style-type: none"> • Acquire the skills of developing human resources in different sectors. • Introduce the students to training and development. • Gain knowledge and skills regarding relationship at work. 	<p>activities of human resource development.</p> <ul style="list-style-type: none"> • Apply the skills of developing human resources in different sectors. • Devise a training and development program to the employees of organizations. • Explain how labour-management relations are different in a unionized environment. • Role-play the position of the organizational counsellor 	
19	FIELD PRACTICUM – III (FP-III)	MSY335F	<ul style="list-style-type: none"> • Apply theoretical knowledge in the counselling field. • Understand the functions and activities of field place organization. • Teach students to administer psychological tests in counselling • Offer a comprehensive view of various therapeutic practices. • Educate the student to create intervention strategy 	<ul style="list-style-type: none"> • applying the theoretical knowledge in the Counselling Field • Comprehend the functions and activities of organization • Administer psychological tests in counselling. • Relate the connection between theory and practice • Connect the various therapeutic practices. • Plan the counselling intervention strategy 	local developmental needs
20	POSITIVE PSYCHOLOGY (MC-11)	MSY430T	<ul style="list-style-type: none"> • Introduce to nature, goals and history of Positive Psychology. • Understand the positive emotional states and process. • Offer knowledge of positive 	<ul style="list-style-type: none"> • Describe the nature, goals and history of Positive Psychology • Summarize the positive emotional states and process • Explain Self efficacy, Optimism 	global developmental needs

			<p>cognitive states and processes.</p> <ul style="list-style-type: none"> • Develop a balanced conceptualizations of Mental Health and Behavior • Creation of a positive environment 	<p>and hope</p> <ul style="list-style-type: none"> • Articulate the concepts related to Mindfulness, Flow, and Spirituality • Contrast the dynamics behind Altruism, Gratitude, and Forgiveness. • Create Positive Environment in school and organization 	
21	FAMILY AND COUPLE COUNSELLING (MC-12)	MSY431T	<ul style="list-style-type: none"> • To understand the historical evolution of field of marriage and couple counselling. • To understand the psychological theories and various therapies in family counselling. • To understand the concept of adaptive and dysfunctional communication patterns. • To analyze or evaluate the entire family counselling process. • To analyze the effectiveness of various techniques of family and couple counselling. 	<ul style="list-style-type: none"> • Appraise the foundational principles and theories of marriage and couple counselling. • Understand the use of various psychological theories and therapies in family counselling. • Recognize the impact of communication patterns among couple. • Describes the counselling process and the assessment procedure following counselling. • Develop the various counselling skills and techniques used in family and couple counselling. • Developing the systems of interactions between family members to reduce distress and conflict. 	national developmental needs
22	HEALTH PSYCHOLOGY (MC-13)	MSY432T	<ul style="list-style-type: none"> • Understand the definition of health psychology and bio-psychosocial model. 	<ul style="list-style-type: none"> • Describe the biopsychosocial model of health and other specific but related psychological theories 	national developmental needs

			<ul style="list-style-type: none"> • Acquire knowledge about health behavior and primary prevention of health issues. • Understand stress and coping methods and management of pain and discomfort. • Compare about chronic and terminal illness. • Contrast manage pain, discomfort, chronic and terminal illness 	<ul style="list-style-type: none"> • Develop an understanding of basic human biology such as the functioning of the endocrine, immune and nervous systems • Evaluate how a person's health can be affected by their behaviour, given certain social factors, environments, and biological factors • Understand the effects of stress on a person's health and the role played by stress-buffering factors • Recognise the factors that underpin positive and negative changes in health-related behaviour, and the promotion of healthy behaviour • Understand the effects of health status and changes in health on a person's emotions, thinking, and behaviour 	
23	COMMUNITY PSYCHOLOGY (ME-2)	MSY433A	<ul style="list-style-type: none"> • To learn the linkage between individuals, communities and societies and handle social issues more effectively with people's participation. • To understand the role and the core values of community psychology. • To understand various mental health issues among students. • To understand various natural 	<ul style="list-style-type: none"> • Analyze the link between individuals and communities and deal with social issues more effectively. • Identify critical elements of the community psychology approach. • Find out the mental health problems concerning with human activities and developmental processes. • Understand the strategies for 	regional developmental needs

			<p>disasters and its consequences.</p> <ul style="list-style-type: none"> To teach counselor's role in community development. 	<p>conservation of nature and natural resources and to solve the emerging problems related to environment degradation.</p> <ul style="list-style-type: none"> Understand the counsellor's role in environment's potential and interventions to improve people's health and psychological well-being. Develop skills for identifying and solving environmental problems. 	
24	PSYCHOMETRY (ME-2)	MSY433B	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
25	ORGANIZATIONAL PSYCHOLOGY (ME-2)	MSY433C	<ul style="list-style-type: none"> Obtain knowledge about organizational psychology. Understand the functions and activities of organization. Acquire the skills of working with organized sectors and 	<ul style="list-style-type: none"> Explain the importance of organizational psychology (OP) and build the relationship between OP and business management. Explain conflicts in organizations and solution techniques through 	regional developmental needs

			<p>human resources.</p> <ul style="list-style-type: none"> • Explain managing self-competency and communication competency. • Explain how job satisfaction and organizational commitment affect performance. 	<p>job analysis, leadership and motivation theories</p> <ul style="list-style-type: none"> • Compare attitudes and attitudes measurement • Appraise the necessary interpersonal, behavioral and technical skills for application in the work setting • Articulate motivation techniques through effective leadership types. • Prioritize the relationship among organizational citizenship behavior, organizational commitment and job satisfaction. 	
26	EMPLOYABILITY SKILLS (SK-2)	MSY434S	<ul style="list-style-type: none"> • Understand the career planning skills in their interest field. • Acquire knowledge about the recruitment channels and analyzing the job advertisements. • Obtain the skill of resume writing. • Develop their teamwork, planning and organizational skills. • Create wider outlook on career decision making process. 	<ul style="list-style-type: none"> • Understand the career planning skills in their interest field. • Identify employment opportunities complete a job application including a CV for a specific job opportunity. • Relate and describe one career path appropriate for oneself • Compare employability skills and personal attributes in relation to job selection methods • Analyze the skills and attributes required to maintain and successfully develop in employment. • Identifying skills and personal attributes commonly required by 	regional developmental needs

				employers	
27	RESEARCH PROJECT (RP)	MSY434J	<ul style="list-style-type: none"> • Understand research methodology by undertaking a research project. • Plan the steps of research by its application. • Acquire the skills of undertaking a research project. • Recognize the scope of statistics. • Interpret diagrammatic and graphic representation of data. 	<ul style="list-style-type: none"> • Design substantial research-based project • Relate and manage change through collaboration with others • Analyse data and synthesize research findings • Extract research findings in written and verbal forms • Use research findings to advance education and psychological theories and practice • Understand ethical issues associated with practitioner research 	Local developmental needs
28	SUMMER INTERNSHIP (SI-2) OPTIONAL		<ul style="list-style-type: none"> • Value experience in a counselling field by being in an open or closed setting. • Understand the Skills, techniques and approaches adopted by the organization. • Apply the knowledge gained, in the field of counselling. • Understand the structure and functions of the organization. • Prioritize to get placed in an institution. 	<ul style="list-style-type: none"> • Relate the theoretical experience with the field by being in an open or closed setting. • Understand the skills, techniques and approaches adopted by the organization. • Apply the knowledge gained, in the field of counselling. • Understand the link between theory and practice. • Connect the structure and functions of the organizations. • Appraise the situation and use the appropriate therapies 	local developmental needs

Name of the Programme: B.Sc. Microbiology

Programme Outcomes: Undergraduates will be able to:

- PO1: Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment.
- PO2: Pursue higher learning programmes and become entrepreneurs.
- PO3: Recognize moral and ethical values and be socially responsible citizens in the society.
- PO4: Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
- PO5: Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings.
- PO6: Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
- PO7: Demonstrate communication skills both oral and written in personal and academic pursuits.

Programme Specific Outcomes [PSO]

- PSO1: Apply the knowledge of microbiological fundamentals to find the solution for complex molecular functions and physiology.
- PSO2: Developing skilled persons in the sector of Disease diagnosis, Treatment and Prevention.
- PSO3: Demonstrate an understanding of the principles, and have practical experience of a wide range of Microbiology techniques through Microbial instrumentation.
- PSO4: Explaining the role of Microbial inoculants for improving the soil quality, plant disease control, Insect control and Plant growth promotion through Sustainable microbiological applications.
- PSO5: Training the students in both theory and practical aspects to accommodate them in both Higher education and Industries.
- PSO6: Augmenting problem-solving skills of students through Industry oriented training programmes at various levels.
- PSO7: Enrich the students with Fundamentals of Microbiology and Advanced Technologies.

- PSO8: Enable the students to employ the acquired Microbiology theoretical knowledge wherever necessary.
- PSO9: Developing Microbiology professional skills in Industry and Institutes, to better placement.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	FUNDAMENTALS OF MICROBIOLOGY	MB103	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To learn the Taxonomy of microorganisms. • To analyze the Ultrastructure of Fungi, Algae and Protozoa. 	<ul style="list-style-type: none"> • Understand the knowledge of Classifications and Taxonomy of Microorganisms in detail. • Acquire the basic knowledge on 	National and global developmental needs

			<ul style="list-style-type: none"> • To understand the Classification of microorganisms. • To recognize the fundamentals on Economic importance of microorganisms. • To impart knowledge on Molecular identification of microorganisms 	<p>the Ultrastructure, Classification, Mode of nutrition and Reproduction of Fungi, Algae and Protozoa.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	Global developmental needs

				<p>microorganisms.</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To make the students to understand the Immune system. • To strengthen the knowledge of students through a detailed 	<ul style="list-style-type: none"> • Introducing the Immunology to study various types of Cells and Organs in Immune systems and Mechanism of immune activation 	National and global developmental needs

			study on Antigens, Antibodies and Immunoassays		
6	MUSHROOM TECHNOLOGY	MB302	<ul style="list-style-type: none"> To encode the importance of the Mushrooms. To obtain a good understanding of Mushroom cultivation and its disease control. To obtain knowledge in nutritional and medicinal values of Mushrooms. 	<ul style="list-style-type: none"> The paper Mushroom Technology provides the information about the Cultivation, Disease control, Nutritional value and Medicinal value of Mushrooms. 	Local and Regional developmental needs
7	BIOINOCULANT TECHNOLOGY	MB401	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
8	MICROBIAL GENETICS	MB402	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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

9	MOLECULAR BIOLOGY AND GENETIC ENGINEERING	MB501	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
10	MEDICAL BACTERIOLOGY	MB502	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
11	VIROLOGY	MB503	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	Regional, and global developmental needs

			<p>Viruses.</p> <ul style="list-style-type: none"> To understand the structure and replication of Bacteriophages 	<p>Structure, Classification, Replication, Pathogenicity, Clinical Syndrome, Laboratory diagnosis, Treatment and Preventive measures for Viruses</p>	
12	MEDICAL MYCOLOGY AND PARASITOLOGY	MB504	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
13	HEALTH CARE AND HYGIENIC PRACTICES	MB505A	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
14	ELECTIVE - COMPUTATIONAL BIOLOGY	MB505B	<ul style="list-style-type: none"> To detail the importance of Computer in the field of Life sciences. To obtain good understanding 	<ul style="list-style-type: none"> The paper Computational Biology adds information about the search engines and various software tools involved in Bioinformatics and 	Global developmental needs

			<p>about the interpretation of Biological database.</p> <ul style="list-style-type: none"> • To uptake knowledge in latest tools and technology 	Chemoinformatics.	
15	ELECTIVE - PHARMACEUTICAL MICROBIOLOGY	MB505C	<ul style="list-style-type: none"> • To explain 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 	<ul style="list-style-type: none"> • The paper Pharmaceutical Microbiology provides an overview of the concepts of manufacture Biopharmaceutical products in today's regulatory environment 	Global developmental needs
16	SSP – 1: NUTRITION AND DIETICS	MB507SP1	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
17	Non – Major Elective I – APPLIED MICROBIOLOGY	NMB 501	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

			<p>harmful ways.</p> <ul style="list-style-type: none"> To study about the water borne disease and microbial standards of water quality. 		
18	MICROBIAL BIOTECHNOLOGY	MB601	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
19	ENVIRONMENTAL MICROBIOLOGY	MB602	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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
20	VERMITECHNOLOGY	MB603	<ul style="list-style-type: none"> To study about the properties of soil and microbial composting. To understand the biology of 	<ul style="list-style-type: none"> The course Vermitechnology has been designed to provide the knowledge to the students about 	National and global developmental needs

			<p>Earthworms and its role in Vermicomposting.</p> <ul style="list-style-type: none"> To learn the ability of Earthworms in Organic farming and Solid waste reclamation 	<p>Organic farming through Composting and Vermicomposting. This paper also provides the details of Earthworms and its role in Solid waste reclamation</p>	
21	<p>FOOD MICROBIOLOGY</p>	MB604	<ul style="list-style-type: none"> 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 microbiologist in food industries. To know the role of microbes in the spoilage of food products 	<ul style="list-style-type: none"> The Food Microbiology paper adds information about the role of microorganisms in many food, beverage and various industries both in production and spoilage processes 	<p>Global developmental needs</p>
22	<p>INDUSTRIAL MICROBIOLOGY</p>	MB605	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	<p>Regional, and global developmental needs</p>

23	SSP – 2: DAIRY TECHNOLOGY	MB607SP1	<ul style="list-style-type: none"> • To encode the importance of the role of microorganisms in Dairy industries • To obtain a good understanding of Dairy microbiology and become an Entrepreneur. • To obtain knowledge in food quality and spoilage of Dairy products. 	<ul style="list-style-type: none"> • The Self-study paper Dairy Technology is about the study of milk and milk-derived food products. It focuses on the biological, chemical, physical, and microbiological aspects of milk itself, and on the technological aspects of the transformation of milk into its various consumer products including fermented products, concentrated and dried products, butter and ice cream. This course also provides information about the role of microorganisms in Dairy products development 	Regional and national developmental needs
24	Non – Major Elective 2 – MICROBIAL DISEASES AND HEALTH CARE	NMB601	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

Name of the Programme: M Sc. Applied Microbiology

PROGRAMME OUTCOMES

Postgraduates will be able to:

- **PO1:** Demonstrate intense knowledge in their discipline.
- **PO2:** Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice.
- **PO3:** Develop expertise in their field of study through Projects and Research activities.
- **PO4:** Prepare them to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization.
- **PO5:** Develop social and ethical responsibility in the transfer and management of knowledge.

PROGRAMME SPECIFIC OUTCOMES [PSO]

- **PSO1:** Analyse the fundamental concepts, taxonomy and biodiversity of microorganisms, enabling critical thinking in different fields of Microbiology.
- **PSO2:** Demonstrate the importance of immunity, microbial disease transmission, pathogenesis, cultivation, laboratory diagnosis, treatment and prevention through therapeutics and prophylaxis in various Health and Pharmaceutical domains.
- **PSO3:** Evaluate and identify the needs, potentials and impact of microorganisms relevant to food, soil and agriculture, ensuring environmental conservation and food safety.
- **PSO4:** Design appropriate strategies in Fermentation technology, with emphasis on Industrial production of biomass and their products.
- **PSO5:** Apply the concepts of Genomics and Proteomics through Analytical, Molecular and In silico techniques for the betterment of society.

- **PSO6:** Examine the significance of Research and Scientific writing using Statistical tools and communicate the findings in Research forums.
- **PSO7:** Ensure biosafety and bioethics for social responsibility, environmental sensitization and obtain Intellectual Property Rights (IPR) for various Research findings.
- **PSO8:** Collaboration, cooperation and realizing the power of groups and community, ability to work in a group, community and ability to grasp ideas and to turn ideas into action related to microbiological mechanisms and processes related to industries, industrial production, health, agriculture, etc.
- **PSO9:** Ability to solve Microbiology related problems by using appropriate concepts and methods to solve them and ability to use various e-resources in order to solve challenges related to Microbiology.
- **PSO10:** Apply entrepreneurial skills of graduates for employability including Microbial inoculants, Vermicomposting and Mushroom cultivation.

S No	Title of the Paper	Course Code	Course Objective	Course Outcome	Relevance
1	GENERAL MICROBIOLOGY AND MICROBIAL DIVERSITY	MB701	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	Global developmental needs

			<p>antibiotics.</p> <ul style="list-style-type: none"> To recognize the fundamentals on Economic importance of microorganisms. 	<ul style="list-style-type: none"> 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. Demonstrate a clear understanding of microbial control mechanisms through Sterilization techniques and Antibiotics. 	
2	MICROBIAL PHYSIOLOGY AND METABOLISM	MB702	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 	Local and Global developmental needs

				<p>and metabolic pathways for energy generation in microbial cells.</p> <ul style="list-style-type: none"> • Recommend students to find the reactions of Intermediate metabolism and Photosynthesis in microorganisms. 	
3	IMMUNOLOGY	MB703	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To make the students to understand the Molecular Biology and Genetic Engineering. • To focus on Genome 	<ul style="list-style-type: none"> • Analyze and understand the basic principles of DNA Replication, Transcription, Translation, Mutation and DNA Repair mechanisms. 	National and Global developmental needs

			<p>organization, Transcription and Translation process in Prokaryotes.</p> <ul style="list-style-type: none"> • To introduce the basic principles of DNA Replication, 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. 	<ul style="list-style-type: none"> • Describe the central cell biological processes and how they are regulated. • Evaluate the role of Vectors in Gene Cloning. • 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 INSTRUMENTATION	MB705A	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	National and Global developmental needs

				Spectrophotometer.	
6	ELECTIVE: BIOSTATISTICS	MB705B	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	ELECTIVE: PHYCOLOGY AND MYCOLOGY	MB705C	<ul style="list-style-type: none"> • To illustrate the basics of Phycology and Mycology. • To understand the relevance of algal- fungal interactions in maintaining aquatic periodicity. • To implement the biomimetic products by studying the real internal symbiotic mechanisms in lichen. 	<ul style="list-style-type: none"> • Illustrate the basic principles of Phycology and Mycology. • Understanding and evaluate the natural biodiversity for controlling pollution rate. • Identify, Classify and Cultivate medically important fungi and parasites. • Evaluate the toxic effect of fungi 	Local, and National developmental needs

			<ul style="list-style-type: none"> • To acquire knowledge regarding harmful environmental changes occurred due to anthropogenic activity via lichen indicator. • To study the various applications of Algae and Fungi. 	<p>and algae for avoid the hazardous affects.</p> <ul style="list-style-type: none"> • Examine the food industry in curbing the growth of toxic mold in food and animal feed. • Focusing on associative benefits of Algae and Fungi. 	
8	MEDICAL BACTERIOLOGY	MB801	<ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • 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 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. 	National and global developmental needs

9	MEDICAL VIROLOGY	MB802	<ul style="list-style-type: none"> • 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 viruses. 	<ul style="list-style-type: none"> • 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
10	MEDICAL MYCOLOGY AND PARASITOLOGY	MB803	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	National and global developmental needs

			<p>Preventive measures for Fungal and Parasitic diseases.</p> <ul style="list-style-type: none"> • To explain the role of Protozoans and Helminths as infectious agents. 	<p>identify, isolate and interpret fungal and parasitic infections.</p> <ul style="list-style-type: none"> • Creating awareness on appropriate preventive and chemotherapeutic measures. 	
11	ELECTIVE - PHARMACEUTICAL MICROBIOLOGY	MB804A	<ul style="list-style-type: none"> • 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. • To understand role of Secondary metabolites in Pharmaceutical industry. • To understand good practices and regulation involved in utilizing microbial product for pharmaceutical application 	<ul style="list-style-type: none"> • 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. • Examining microbial contamination during pharmaceuticals formulations and production. • Advice good laboratory practices for better understanding. • Formulate regulations for utilizing microbial product in pharmaceutical applications. 	Global developmental needs
12	ELECTIVE - BIOINFORMATICS	MB804B	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	Global developmental needs

			<p>database concept, management, retrieval along with utilization in gene and protein analysis.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	
13	ELECTIVE – PUBLIC HEALTH MICROBIOLOGY	MB804C	<ul style="list-style-type: none"> • 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. • To acquaint the student with basic concept of public health and prophylactic measures. • To understand air, Food, water, insect borne infectious diseases. • To create public awareness, individual behavior, and disease prevention. 	<ul style="list-style-type: none"> • Create awareness to prevent disease, promote health, and prolong life among the population as a whole. • Provide conditions in which people can be healthy and focus on entire populations, not on individual patients or diseases. • Operate and employ the National disease control plans for major infectious diseases. • Understanding the Comprehensive health education campaigns to increase public awareness of these diseases in rural areas of India. • Support for the investigation, management and control of infection and outbreaks of Communicable disease. 	Local and Regional developmental needs

				<ul style="list-style-type: none"> • Provide assistance during field investigations by processing Clinical samples. 	
14	RESEARCH METHODOLOGY	MB901	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
15	BIOINOCULANT TECHNOLOGY AND PLANT PATHOLOGY	MB902	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	National and global developmental needs

			<ul style="list-style-type: none"> • To give knowledge on Plant pathogen interaction and its control. • To learn the ability of Biopesticides and Biocontrol agents in Plant growth. 	<ul style="list-style-type: none"> • and its control measures. • Developing different methods for the Pest control using microbes. • Recommending the factors for good Soil quality and Agricultural output through sustainable Microbiological applications. 	
16	MUSHROOM TECHNOLOGY	MB903	<ul style="list-style-type: none"> • To modify of the Mushroom cultivation in a scientific way for livelihood. • To differentiate edible and poisonous mushrooms and their effects. • To encode the importance of the Mushrooms. • To outline the process of Mushroom cultivation. • To obtain a good understanding of Mushroom cultivation and its disease control. 	<ul style="list-style-type: none"> • Provides the information about the Cultivation, Nutritional value and Medicinal value of Mushrooms. • Gaining knowledge about different types of Mushrooms. • Analyze the pathological damage on mushrooms and outline the post-harvest practices. • Demonstrate the methods for Disease control in Mushrooms. • Assess the nutrient and medicinal value of edible mushrooms and analyse effects of mushroom poisoning. • Develops Entrepreneurial skill on Production and Marketing of Mushroom. 	Local and Regional developmental needs
17	ENVIRONMENTAL MICROBIOLOGY	MB904	<ul style="list-style-type: none"> • To describe the distribution and enumeration of air microflora and categorize the air borne diseases. • To discuss the Terrestrial ecosystem and Aquatic ecosystem. 	<ul style="list-style-type: none"> • Assess the role and importance of microorganisms in Atmosphere, Hydrosphere and Pedosphere. • Understanding the role of microorganism in recycling Soil nutrients through Biogeochemical cycles. 	Global developmental needs

			<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	
18	ELECTIVE: MICROBIAL REMEDICATION	MB905A	<ul style="list-style-type: none"> • To motivate against environmental pollution. • To find solution for pollution using microbes. • To study the remediation 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. 	<ul style="list-style-type: none"> • Developing basic skills Environmental microbiology and Microbial remediation of wastes. • Finding solution for various pollution related problems. • 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 	Global developmental needs

				process.	
19	ELECTIVE: VERMITECHNOLOGY	MB905B	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
20	ELECTIVE – MICROBIAL NANOTECHNOLOGY	MB905C	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	Global developmental needs

			<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	
21	FOOD MICROBIOLOGY	MB1001	<ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • 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. • 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. 	Regional and global developmental needs

22	INDUSTRIAL MICROBIOLOGY	MB1002	<ul style="list-style-type: none"> • 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 enzymes. 	<ul style="list-style-type: none"> • 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 downstream process. • Understanding the Industrial production of Antibiotics, Vaccines, Organic acids, Organic solvents, Amino acids, Vitamins and Industrial enzymes. 	National and global developmental needs
23	ELECTIVE: MICROBIAL BIOTECHNOLOGY	MB1003A	<ul style="list-style-type: none"> • To learn the basic tools in Microbial Biotechnology. • To study the various Immobilization techniques. • To understand the various concepts of Recombinant DNA 	<ul style="list-style-type: none"> • Describe about different metabolites like antibiotics, organic acids, enzymes, drugs, vitamins, therapeutic peptides and pharmaceutical products, biopesticides and biofertilizers of 	Global developmental needs

			<p>Technology and Microbial products.</p> <ul style="list-style-type: none"> • To understand the production of Microbial Biotechnology products. • To emphasize on IPR issues and need for knowledge in patents in Biotechnology. 	<p>microbial origin.</p> <ul style="list-style-type: none"> • 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. 	
24	ELECTIVE: MICROALGAL TECHNOLOGY	MB1003B	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	Regional, National and global developmental needs

				<ul style="list-style-type: none"> • Focus the idea about Bioremediation using microalgae. 	
25	ELECTIVE: PROBIOTIC MICROBIOLOGY	MB1003C	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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
26	SSP: COMPREHENSIVE MICROBIOLOGY	MB1005SP 1	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	National and Global developmental needs

			Competitive exams.	the NET exam which will be conducted by ARS/ASRB/CSIR.	
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Name of the Programme: BA History

PROGRAMME OUTCOMES

Undergraduates will be able to:

- PO1: Discuss their new knowledge and understanding; apply new ideas in order to acquire employability/self-employment.
- PO2: Pursue higher learning programmes and become entrepreneurs.
- PO3: Recognize moral and ethical values and be socially responsible citizens in the society.
- PO4: Apply analytical, technical, problem solving, critical thinking skills, and decision-making skills in solving real life problems in one's life and in the society.
- PO5: Direct their own self-learning through MOOC courses, co-curricular activities, industrial exposures and field trainings.
- PO6: Develop their own broad conceptual background in Biological sciences, Computing sciences, Languages and culture, Management studies, Physical sciences, etc.
- PO7: Demonstrate communication skills both oral and written in personal and academic pursuits.

PROGRAMME SPECIFIC OUTCOMES [PSO]

- **PSO 1:** Acquire a comprehensive understanding of the evolution of human civilization in different parts of the world.
- **PSO 2:** Develop and appreciate the attitude of respective culture at the local, regional, national and global level.
- **PSO 3:** Apply the skills of rational enquiry, critical thinking, effective communication and explore the relationship between the past and the present.
- **PSO 4:** Enrich the fundamental ideas on social, economic, political and religious institutions in India through the ages.
- **PSO 5:** Identify the patterns of change and continuity over time in the context of contemporary significance.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	HISTORY OF INDIA UP TO 712 A.D	HT103	<ul style="list-style-type: none"> To understand the evolution of human civilization of Ancient India To enable the students to learn the social, economic and religious condition of India. To examine the political unity, art and architecture of India. To evaluate the cultural progress of various dynasties. To assess the importance of native empires in Ancient India. 	<ul style="list-style-type: none"> Recall the historical evolution of Indian culture and civilization. The student would have a background understanding of the socio – economic and religious developments shaping India in its early phase. Explain the cultural and political achievements of the Mauryan kingdom. Point out the significance of the Indian culture. Recognize the native empires of India up to 712 A.D. 	national developmental needs
2	HISTORY OF TAMIL NADU UP TO 1336 A.D.	HT104	<ul style="list-style-type: none"> To become aware of the political, social and economic developments of Tamil Nadu. To identify the contribution of 	<ul style="list-style-type: none"> Asses the formation of various ruling dynasties and the consequent socio – economic and political developments in Tamil Nadu. Illustrate the origin and 	local, regional Developmental needs

			<p>Pallavas to art and architecture.</p> <ul style="list-style-type: none"> • To study the development of art and architecture under the Cholas. • To evaluate the socio, economic and religious condition of Tamil Nadu under the Pandyas. • To describe the advent of Islam in Tamil Nadu. 	<p>growth of Bakthi movement and the evolution of art and architecture under the Pallavas.</p> <ul style="list-style-type: none"> • Explain the cultural achievements of Cholas. • Discuss the socio, economic and religious condition under the Pandyas • Recognize about second Pandya Empire and the establishment of Madurai Sultanate. 	
3	ALLIED – I: PRINCIPLES OF TOURISM	AH111	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

			evolution of travel agency and tour operation business.		
4	HISTORY OF INDIA (712 – 1526 A.D.)	HT203	<ul style="list-style-type: none"> • To enable the students to acquire knowledge about the role of Rajputs and Delhi Sultanate. • To evaluate the administration of the Delhi Sultanate. • To analyze the administrative skills of Khilji dynasty. • To evaluate the contribution of Sultanate to Art and Architecture. • To know the historical significance of Vijayanagar empire in Medieval India. 	<ul style="list-style-type: none"> • Recall impact of Arab invasion and the establishment of Delhi Sultanate. • Evaluate the political and administrative system of the slave dynasty. • Point out the administrative and Economic reforms of Khilji Dynasty. • Identify the richness of the Medieval Indian Art and Architecture. • Summarize the cultural contribution of the Vijayanagar Empire. 	national developmental needs
5	HISTORY OF TAMIL NADU (1336 – 1947 A.D.)	HT204	<ul style="list-style-type: none"> • To understand the socio, economic and cultural condition of the Nayaks of Madurai, Tanjore and Senji. • To explain the rise of Marathas of Tanjore, Marava kingdoms of Ramnad and Sivaganga. 	<ul style="list-style-type: none"> • Know about the Vijayanagar and Nayankara System. • Highlight the conditions of Tamil Nadu under the non-Tamil rulers. • Explain the Advent of the Europeans in Tamil Nadu. • Identify the socio-religious reform 	Local and regional developmental needs

			<ul style="list-style-type: none"> • To analyse the establishment of European companies and the conflict with the native rulers. • To examine the role of Christian Missionaries in the field of Education in Madras presidency. • To understand the political consciousness and the freedom movement in Madras Presidency 	<p>movements in Tamil Nadu.</p> <ul style="list-style-type: none"> • Summarize the socio, economic and educational development in Tamil Nadu after independence. 	
6	ALLIED – II: TOURISM AND TRAVEL MANAGEMENT	AH211	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	Global national developmental needs

			transportation and accommodation to the domestic and international tourism.	<p>independence.</p> <ul style="list-style-type: none"> • The course examines the various modes of transport and the importance of domestic and international tourism. 	
7	ALLIED – I: HISTORY OF INDIA (1858 – 1947 A.D.)	AH112	<ul style="list-style-type: none"> • To focus on the socio-economic changes and development of administration during the British Rule. • To understand the emergence of the National Movement in India. • To study the significance of the Home Rule Movement and Non-Cooperation Movement. • To appraise the different phases of National Movement and Constitutional advancement. • To highlight the factors that led to the partition of India. 	<ul style="list-style-type: none"> • Assess the socio-economic and administrative impact during the British Rule • Recall the concept of nationalism and causes for the national awakening. • Discuss the role of Annie Besant and Gandhian in the freedom movement. • Summarize the development of representative institutions with special reference to reservation. • Explain the impact of partition of India. 	national developmental needs
8	ALLIED-II: HISTORY OF INDIA (1947-2014 A.D)	AH212	<ul style="list-style-type: none"> • To create awareness on the challenges of Independent India during the tenure of 	<ul style="list-style-type: none"> • Examine the challenges of free India in Constitution making and socio-economic 	national developmental needs

			<p>Jawaharlal Nehru.</p> <ul style="list-style-type: none"> • To study the administrative initiatives of Lal Bahadur Shastri and Indira Gandhi. • To highlight the factors that led to the emergency and its impact for the rise of Janata Party. • To understand the factors for the introduction of new economic policy since Rajiv Gandhi. • To study the evolution of Indian Foreign Policy and the growth of science and technology. 	<p>planning.</p> <ul style="list-style-type: none"> • Analyze India's relations with foreign powers with special reference to Pakistan. • Assess the factors for the proclamation of emergency and the consolidation of opposition parties under the leadership of Jayaprakash Narayan. • Point out the various dimensions of New Economic Policy and its relative impact in society and economy. • Summarize the evolution of India's foreign policy since 1947. 	
9	HISTORY OF INDIA (1707 - 1857 A.D)	HT304	<ul style="list-style-type: none"> • To understand the struggle for supremacy among the European powers. • To study the background for the decline of the native states and establishment of the British rule in India. • To know about the Indian upheavals 	<ul style="list-style-type: none"> • Assess the expansion of European settlements in India. • Review the different policies and methods of the colonial administrators. • Analyze the various battles of British to consolidate their colonial rule in India. • Highlight the 	regional and national developmental needs

			<p>against colonial rule.</p> <ul style="list-style-type: none"> • To understand the introduction of modern political institutions in the nineteenth century. • To study the nature of social and political changes under the British. 	<p>development of the imperial legislature during the British rule.</p> <ul style="list-style-type: none"> • Reconstruct the native resistance against foreign rule during the 18th and 19th centuries 	
10	ALLIED – III: PRINCIPLES OF PUBLIC ADMINISTRATION	AH309	<ul style="list-style-type: none"> • To explain the nature, scope and importance of public administration. • To illustrate the major theories of public administration. • To understand the relative role of chief executive, line, staff and auxiliary agencies. • To study the various methods of recruitment and training. 	<ul style="list-style-type: none"> • Acquire depth knowledge of Public Administration. • To receive the knowledge on principles of organizations. • Examine the merits of the chief executive. • To explain the objectives of personnel administration. • To understand the benefit of budgetary system in India 	regional and national developmental needs
11	HISTORY OF INDIA (1858 – 1947 A.D)	HT403	<ul style="list-style-type: none"> • To highlight the British Administration in India from 1858 – 1947 A.D. • To understand the constitutional growth under the British Rule. • To trace the history of 	<ul style="list-style-type: none"> • Explain the British Administration in India from 1858 – 1947 A.D. • Discuss the constitutional growth under the British Rule • Assess the socio – economic changes and 	regional and national developmental needs

			<p>Indian National Movement.</p> <ul style="list-style-type: none"> To understand the development of representational and institutions self-governance mechanism. Discuss the events that led to the partitioning British India. 	<p>developments during the British Rule.</p> <ul style="list-style-type: none"> Evaluate the history of Indian National Movement. Analyze the contribution of social reformers in British India. 	
12	<p>CONTEMPORARY HISTORY OF INDIA (1858 – 1947 A.D)</p>	HT404	<ul style="list-style-type: none"> To study the process of Constitution making and integration of native states. To understand the significance of Indo-Pak war and Tashkent Agreement. To know about the total revolution and the emergence of Janata party. To examine the policies and programmes of Congress and National Front Governments. To study the Coalition governments from 1996 to 2014 and its impact in domestic 	<ul style="list-style-type: none"> Assess the consolidation of India during the Nehru era. Summarize the policies of Lal Bahadur Shastri and Indira Gandhi. Discuss the administration of Janata Government and Re-emergence of Indira Gandhi. Analyze the introduction of new economic policy and its impact Examine the consolidation of economic development and foreign policy under the Coalition Governments. 	<p>regional and national developmental needs</p>

			and foreign policy.		
13	ALLIED – IV: OUTLINES OF COMPARATIVE GOVERNMENTS	AH409	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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
14	ALLIED – IV: OUTLINES OF COMPARATIVE GOVERNMENTS	AH310	<ul style="list-style-type: none"> • To obtain the basic knowledge of state and different forms of governments. • To study the traditional and modern classification of Constitutions. • To assess the 	<ul style="list-style-type: none"> • 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 	Global and national developmental needs

			<p>unicameral and bicameral system of legislatures in modern governments.</p> <ul style="list-style-type: none"> • 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. 	<p>Government.</p> <ul style="list-style-type: none"> • Examine the influence of the executive and administrative law. • Analyze the role of political parties in India. 	
15	THE CONSTITUTION OF INDIA	HT407	<ul style="list-style-type: none"> • To study the evolution of Indian Constitution. • To understand the rights and duties of the citizens of India. • To learn about the basic principles of Indian constitution. • To analyze the working of the union government, state government, and the relationship between the two. • To assess the importance of constitutional bodies like the Election Commission and Public Service 	<ul style="list-style-type: none"> • Students would be able to study the nature and unique features of Indian constitution. • They get familiarized with DPSP and other provisions of the constitution. • They would get an idea about the concepts like fundamental rights and duties, federalism, citizenship etc. • Evaluate the role of the Indian judiciary in interpreting and uploading the Constitution. • Appreciate the role of the constitutional bodies. 	regional and national developmental needs

			Commissions		
16	HT506 – HISTORY OF EUROPE – I (1453 – 1789 A.D.)	HT506	<ul style="list-style-type: none"> • 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. • To assess the role of the absolutist rulers in 17th and 18th century Europe. • To discuss the establishment of colonies in Asia. 	<ul style="list-style-type: none"> • 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 impacts of Industrial Revolution. • Students realize the significance of Geographical Discoveries, Renaissance and Reformations in Christianity. 	Global developmental needs
17	HISTORY OF CHINA AND JAPAN (1911 – 1990 A.D.)	HT507	<ul style="list-style-type: none"> • To study the history of China during the twentieth century. • To discuss about the revolutions and rebellions that took place in 20th century China. 	<ul style="list-style-type: none"> • 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 	Global developmental needs

			<ul style="list-style-type: none"> • 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. 	<p>China.</p> <ul style="list-style-type: none"> • 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. 	
18	CONSTITUTION OF INDIA	HT508	<ul style="list-style-type: none"> • To study the evolution of Indian Constitution. • To understand the rights and duties of the citizens of India. • To learn about the basic principles of Indian constitution. • To analyze the working of the union government, state government, and the relationship between the two. • To assess the importance of 	<ul style="list-style-type: none"> • Students would be able to study the nature and unique features of Indian constitution. • They get familiarized with DPSP and other provisions of the constitution. • They would get an idea about the concepts like fundamental rights and duties, federalism, citizenship etc. • Evaluate the role of the Indian judiciary in interpreting and 	regional and national developmental needs

			constitutional bodies like the Election Commission and Public Service Commissions.	uploading the Constitution. <ul style="list-style-type: none"> • Appreciate the role of the constitutional bodies. 	
19	HISTORIOGRAPHY	HT509	<ul style="list-style-type: none"> • To study the definition and scope of History. • To understand the technical terms such as Dialectical Materialism, Objectivity in History, Causation in History. • To study the contributions made by Ancient Greco-Roman Historians such as Herodotus, Pliny, Livy, Strabo and Thucydides. • To study the nature of history in relation with other disciplines. • To make the student to understand the various ideas that shaped the work of leading historians. 	<ul style="list-style-type: none"> • Students get familiarized with footnoting, writing references and bibliography. • Students would have knowledge about the Modern Historians like Arnold Toynbee and his contribution to the history of 18th century England. • Students would get an idea about the famous Marxian historians in India such as Romila Thapar, Irfan Habib and Bipin Chandra. • Students would have the opportunity to compare the writings of the traditional historians like Nilakanta Sastri, R G Bhandarkar with that of R S Sharma, Romila Thapar and others. • Students would be able to know about the contribution of noted 	Local and national developmental needs

				historians of the past with special reference to India.	
20	MAKERS OF MODERN INDIA	HT510A	<ul style="list-style-type: none"> • To Study the nature of French Revolution and emergence of Mahatma Gandhi • 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 results • To focus on the cold war and emergence of power blocs and disintegration India 	<ul style="list-style-type: none"> • To Study the nature of French Revolution and emergence of Gandhi • 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 results • To focus on the cold war and emergence of power blocs and disintegration India 	regional and national developmental needs
21	HISTORY OF EUROPE – II (1789 – 2000 A.D.)	HT606	<ul style="list-style-type: none"> • To Study the nature of French Revolution and emergence of Napoleon Bonaparte • 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 	<ul style="list-style-type: none"> • To Study the nature of French Revolution and emergence of Napoleon Bonaparte • 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 	Global developmental needs

			<p>problems of WWII and its results</p> <ul style="list-style-type: none"> To focuss on the cold war and emergence of power blocs and disintegration USSR 	<p>problems of WWII and its results</p> <ul style="list-style-type: none"> To focuss on the cold war and emergence of power blocs and disintegration USSR 	
22	HISTORY OF USA (1865 – 1990 A.D.)	HT602	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 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 needs
23	CONTEMPORARY HISTORY OF TAMIL NADU (1947 – 2016 A.D)	HT608	<ul style="list-style-type: none"> To study about the congress government in Tamil Nadu since independence. To make the students to understand the various schemes of Kamaraj for the development of Tamil Nadu during his Era. To become aware of the formation of DK and DMK in Tamil 	<ul style="list-style-type: none"> Discuss the impact of the kula kalvi thittam of Rajaji in Tamil Nadu. Examine the various schemes of Kamaraj for the development of education in Tamil Nadu. Review the origin and development of DK and DMK in Tamil Nadu. The students are familiar with the DMK and 	local, regional developmental needs

			<p>Nadu.</p> <ul style="list-style-type: none"> • To study comparatively about the welfare schemes of MGR and J. Jeyalalitha. • To emphasize the various policies and disputes in contemporary Tamil Nadu. 	<p>AIADMK government with its policies and programmes.</p> <ul style="list-style-type: none"> • Analyze the effect of Coalition Politics on Tamil Nadu. The students are familiar with the Congress, DMK, AIADMK governments that governed TamilNadu with its policies and programmes. 	
24	INDIA AND HER NEIGHBOURS	HT604	<ul style="list-style-type: none"> • To study the development of the Indian foreign policy during the period of J Nehru, L B Sastri, Indira Gandhi, Rajiv Gandhi and Narendra Modi. • To critically evaluate the failures of India's Foreign Policy. • To examine India's role as a member in the international organizations like BRICS, ASEAN etc. • To enable the students to understand the core issues on India's foreign policy and the 	<ul style="list-style-type: none"> • Explains the development of the Indian foreign policy during the period of J Nehru, L B Sastri, Indira Gandhi, Rajiv Gandhi and Narendra Modi. • Demonstrate the core issues on India's foreign policy and the challenges faced with its South Asian neighbours • Significance of regional organizations for the promotion of peace and stability. • Importance of India's role as a member in the international organizations like 	national developmental needs

			<p>challenges faced with its South Asian neighbours.</p> <ul style="list-style-type: none"> To make them realize the importance of regional organizations for the promotion of peace and stability. 	<p>BRICS, ASEAN etc</p> <ul style="list-style-type: none"> Evaluate the failures of India's Foreign Policy 	
25	MAIN ELECTIVE – I: HUMAN RIGHTS	HT610A	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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

Name of the Program: PGDMLT

PROGRAMME OUTCOMES AT POSTGRADUATE DIPLOMA LEVEL

Postgraduates will be able to:

- PO1: Demonstrate intense knowledge in their discipline
- PO2: Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
- PO3: Develop expertise in their field of study through projects and research activities
- PO4: Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
- PO5: Develop social and ethical responsibility in the transfer and management of knowledge

PROGRAMME SPECIFIC OUTCOMES [PSO]

PSO-1: After completion of the program the students are well poised to pursue careers in academic and industry in the areas of pharmaceutical and biotechnology and Health care professionals for services in the fields of clinical biochemistry, laboratory management, hospital and community services.

PSO-2: The students will be able to demonstrate practical skills in handling biological specimens, analysis and their safe disposal.

PSO-3: Communicate the fundamental concepts of specific molecules, enzymes, cells, organ systems and metabolism of compounds.

PSO-4: Apply the knowledge and expertise in industries, diagnostic laboratories and various research fields.

PSO-5: Impart practical skills and scientific knowledge in domains of Molecular biology, enzymology, genetics, clinical biology and immunology.

PSO-6: Develop problem solving ability by utilizing the conceptual knowledge, analytical techniques, computational and statistical approaches.

PSO-7: Facilitate to pursue higher education in related fields in life sciences and contribute their knowledge to the betterment of the society in various research and health care sectors.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ADVANCED MOLECULAR LABORATORY TECHNIQUES2	BCD209	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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
2	HUMAN PATHOGENS &	BCD210	<ul style="list-style-type: none"> To acquire broad knowledge on human pathogens, its 	<ul style="list-style-type: none"> Identify the fundamentals concepts in human pathogens, its 	Regional

	<p style="text-align: center;">BODY FLUID ANALYSIS</p>		<p>symptoms, causes and treatment.</p> <ul style="list-style-type: none"> • To understand the fundamentals concepts in bacteriology, virology and mycology. • To know the basics of source and mode of action of Viruses and fungi infecting the humans. • To comprehend the formation, collection and functions of Amniotic and Cerebrospinal fluids. • To exhibit skills on the formation, collection and functions of Serous fluid and other body fluids. 	<p>symptoms, causes and treatment.</p> <ul style="list-style-type: none"> • Demonstrate broad knowledge on the fundamentals concepts in bacteriology and virology. • Distinguish the fundamentals concepts in mycology and its pathogenesis in humans. • Determine to know the fundamentals of source and mode of action of Human Viruses and fungi. • Correlate and measure the formation, collection and functions of Amniotic and Cerebrospinal fluids. • Originate on the formation, collection and functions of Serous fluid and other body fluids. 	<p>developmental needs</p>
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Name of the Programme: PGDHRM

Programme outcomes (PO)

- PO1 Demonstrate intense knowledge in their discipline
- PO2 Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
- PO3 Develop expertise in their field of study through projects and research activities
- PO4 Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
- PO5 Develop social and ethical responsibility in the transfer and management of knowledge

Programme Specific Outcomes (PSO) for PGDHRM

- PSO1 - Apply professional skills in the functional area of human resource management for organizational effectiveness; appraise managerial issues and problems related to the global business and human resource management
- PSO2 – Gain an understanding of fundamentals of HRD, developing an HRD strategy, understanding the operational role of HRD and the key issues involved in HRD and HRIS
- PSO3 - Acquire the fundamentals of evolution of industrial relations and trade unionism in India, legislations related to industrial relations, various methods of settlement of industrial dispute, labour welfare and labour education, and worker education and training
- PSO4 - Learn about organizational Process & Change, Managing organizational change, Organizational development and contemporary issues in organizational development especially compensation and benefits
- PSO5 – Develop knowledge on training, and development of human resources, employee socialization, adopting strategic human resource development techniques

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	ORGANIZATION THEORY, STRUCTURE AND DESIGN	MSDH121	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.	<ul style="list-style-type: none"> • Understand and Learn about Organizations and Organizational Effectiveness • Gain knowledge about Organization's Stakeholders, Managers, and Ethics • Design Organizational Structure: Authority and Control, Specialization and Coordination • Create and Manage Organizational Culture • Analyze to Manage Conflict, Power, and Politics 	Regional
2	HUMAN RESOURCE MANAGEMENT AND INFORMATION SYSTEM	MSDH122	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.	<ul style="list-style-type: none"> • Understand the concept of human resource management and to understand its relevance in organizations • Analyze the strategic issues and strategies required to select and develop manpower resources. • Integrate the knowledge of HR concepts to take correct business decisions • Explain the purpose of Human Resources Information System and how it facilitates HR Program 	National

				<ul style="list-style-type: none"> • Develop HRIS software with a focus on Recruitment, Selection, Performance Management, Employee Tracking, Payroll, and Employee Separation 	
3	HUMAN RESOURCE PLANNING	MSDH123	<p>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.</p>	<ul style="list-style-type: none"> • State the importance of Human Resource function in planning and staffing organizational manpower requirements • Explain fundamental concepts, principles, techniques and judgment in supply-demand forecasting and supply programs in determining HR planning • Evaluate strategies to integrate human resources planning with the strategic initiatives of senior management to achieve overall business objectives • Appraise succession plans and critical staffing objectives and evaluate the complexities of downsizing issues and the role of HR planning in the process of downsizing • Analyze global issues and how these affect HR planning 	Regional
4	INDUSTRIAL RELATIONS AND EMPLOYEE WELFARE	MSDH124	<p>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</p>	<ul style="list-style-type: none"> • Describe fundamental concepts and nature of Industrial Relations • Understand the nature and role of trade unions for workers and industries 	

			and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Human Resource Management.	<ul style="list-style-type: none"> • Examine the relevance of Welfare measures collective bargaining and its impact on employee-management relations • Assess the issues related to Industrial health hazards, hygiene and psychological problems faced by the employees in Industry • Acquire skills in handling employer-employee relations in labour management 	National
5	EMPLOYEE LEGISLATION	MSDH221	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.	<ul style="list-style-type: none"> • 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

6	COMPENSATION AND BENEFITS	MSDH222	<p>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.</p>	<ul style="list-style-type: none"> • 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
7	TRAINING AND DEVELOPMENT	MSDH223	<p>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.</p>	<ul style="list-style-type: none"> • Explain the role and importance of training and development in the organization • Assess the training need analysis that helps to identify the skill gap among the employees and address them • Design a module to address the skill gap of the employees or the need of the organization and understand the role of OD intervenes 	Global developmental

				<ul style="list-style-type: none">• Analyze the training methods and incorporate them to yield the right outcome from the trainees with apt innovative methods• Evaluate the training and development process in the organization	needs
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Name of the Programme: PGDIEM

Programme outcomes (PO)

- PO1 Demonstrate intense knowledge in their discipline
- PO2 Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
- PO3 Develop expertise in their field of study through projects and research activities
- PO4 Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
- PO5 Develop social and ethical responsibility in the transfer and management of knowledge

Programme Specific Outcomes (PSO) for PGDIEM

- PSO1- To improve the knowledge about the fundamentals of business, its functioning and current strategies adopted across industries and countries.
- PSO2- Develop skills on analysing the business data, application of relevant analysis, and problem solving in functional areas such as marketing, finance, operations and human resources relating to international trade.
- PSO3- To collaborate and lead teams across organizational boundaries and demonstrate leadership qualities, maximize the usage of diverse skills of team members in the related context.
- PSO4- To demonstrate a global outlook with the ability to identify aspects of the global business and Cross Cultural Understanding.
- PSO5- To bring in awareness of ethical issues, identify the contemporary social needs and explore the opportunities for social entrepreneurship in international trade.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	EXIM POLICY & EXPORT PROCEDURE & DOCUMENTATION	MSDI121	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.	<ul style="list-style-type: none"> • On successful completion of this course, students will be able to • Learn and understand the export policy and procedure related to export domain • Categorize the various terms and conditions of exports with due respect to pre-shipment, post-shipment and EGC services • Update the benefits and gains of export and apply it in real life • Articulate export promotion scheme and create business opportunities amidst graduates • Focus on the commodities of India and create an awareness 	National
2	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.	<ul style="list-style-type: none"> • 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 	Global developmental needs

				<ul style="list-style-type: none"> Classify the import and export schemes and assess the India's foreign trade activities and movements 	
3	INTERNATIONAL LOGISTICS AND SUPPLY CHAIN MANAGEMENT	MSDI123	<p>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.</p>	<ul style="list-style-type: none"> 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
4	INTERNATIONAL ECONOMICS	MSDI124	<p>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.</p>	<ul style="list-style-type: none"> 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

				<p>create an interest to assess and identify investment opportunities in international trade business</p> <ul style="list-style-type: none"> • 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. 	
5	INTERNATIONAL FINANCE & FOREIGN EXCHANGE MANAGEMENT	MSDI221	<p>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.</p>	<ul style="list-style-type: none"> • 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
6	INTERNATIONAL MARKET RESEARCH	MSDI222	<p>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</p>	<ul style="list-style-type: none"> • Understand the basics of international market research • Apply the methods and techniques of marketing research • Analyze and use the various methods of sampling and 	

			rapidly expanding world of Import Export Management.	<p>questionnaire appropriately</p> <ul style="list-style-type: none"> • Evaluate the future trends by accurate data analysis and interpretation • Formulate the international market opportunities 	Global developmental needs
7	EXPORT AND IMPORT MANAGEMENT	MSDI223	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.	<ul style="list-style-type: none"> • Develop an understanding of export and import • Outline the nature of international trade • Formulate the methods of EXIM documentation • Understand the importance and relevance of foreign trade policy • Compile the ways and means of processing the EXIM orders. 	National

Name of the Programme: PGDLM

Programme outcomes (PO)

- PO1 Demonstrate intense knowledge in their discipline
- PO2 Exhibit specialized skills to plan, analyze and draw conclusions related to their respective field of study in theory and in practice
- PO3 Develop expertise in their field of study through projects and research activities
- PO4 Prepare themselves to incorporate new technologies in their own discipline and demonstrate excellence in their area of specialization
- PO5 Develop social and ethical responsibility in the transfer and management of knowledge

Programme Specific Outcomes (PSO) for PGDLM

- PSO1 Demonstrate knowledge and skills of core concepts relating to business, commerce, supply chain management and logistics
- PSO2 Apply computer-based supply chain optimization tools including the use of selected state of the art supply chain software suites currently used in business
- PSO3 Building skills in students for delivering customized logistic solutions. The course explores subject areas such as product distribution, supply chain, inventory control, transportation management and customer services.
- PSO4 Emanate leadership, creativity, attitude, skills, passions and learning from its every corner to cast its rays towards empowering business excellence in logistics and supply chain
- PSO5 Ability to increase operational effectiveness of supply chains, leverage emerging digital supply chain business models, and transform organizations into a digital supply chain

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	SUPPLY CHAIN MANAGEMENT	MSDL121	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.	<ul style="list-style-type: none"> • Understand the fundamentals, Evolution and performance of supply chain • Ability to design supply chain networks to enhance supply chain performance of supplier • Organize demand based inventory and supply • Evaluate the supply chain network models in supply chain performance and decisions • Assess the innovations for sustainable development in supply chain management 	Regional
2	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.	<ul style="list-style-type: none"> • 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 	National

				management	
3	REVERSE AND CONTRACT LOGISTICS	MSDL123	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.	<ul style="list-style-type: none"> • Formulate a the practices and processes set up for organizing product returns from points-of-sales to the manufacturer in order to repair, recycle or dispose of these articles in the most cost-effective way. • Understand the basics of contract logistics, third party logistics industry and third party logistics providers • Develop recouping the monetary value of items that were rejected can open up new business opportunities. • Apply and implement a contract logistics and closed supply chain in Retail, FMCG and Automobile sectors. • Show the returns and making the return order right, reduce related costs (administration, shipping, transportation, tech support, QA, etc.) 	local
4	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	<ul style="list-style-type: none"> • Design network that denotes the number and location of production plants, storage houses, equipment for handling of materials in moving products with 	

			and foundations for acquiring a wide range of rewarding careers into the rapidly expanding world of Logistic and Supply Management.	<p>optimization of time and cost</p> <ul style="list-style-type: none"> • 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
5	WAREHOUSE MANAGEMENT	MSDL221	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	<ul style="list-style-type: none"> • List the activities carried out there are the receipt, storage, preparation and dispatch of goods • Classify materials are accessible whenever the production department needs them, ensuring 	

			rapidly expanding world of Logistic and Supply Management.	<p>that production is not stopped or slowed down due to a lack of resources</p> <ul style="list-style-type: none"> • Organize to purchasing products or stock on a regular basis, an organisation may negotiate discounts and other incentives to lower the overall cost • Evaluate and describing proper and safe warehouse operations and techniques • Comparing operational warehouse processes using terminology, concepts and methods of warehouse management 	Regional
6	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.	<ul style="list-style-type: none"> • 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 	National

				<p>needless storage expenses.</p> <ul style="list-style-type: none"> • 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 	
7	PURCHASE AND INVENTORY MANAGEMENT	MSDL223	<p>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.</p>	<ul style="list-style-type: none"> • 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

Name of the Programme: PGDCS

Programme outcomes (PO)

The Post Graduate Diploma in Cyber Security (PGDCS) is designed to prepare the students for careers in cyber security. This course is designed to provide a foundational platform for Cyber Security Aspirants by teaching the basics and core of Cyber Security that enables them to identify and remove a scam or attack before it is fully enacted, thus minimizing damage to the resources and ensuring the protection of information technology assets.

Programme Specific Outcomes (PSO) for PGDCS

- i.** Makes the professional qualified to deal with information systems security, control and auditing the security protocols and ensuring the integrity of the information system.
- ii.** Teaches to identify vulnerabilities and check whether the information system in question is complying with the required standards and rules of information systems security.
- iii.** Enables to control and govern an IT system and helps you understand the implementation of information systems.
- iv.** Prepares to have complete understanding and control of the information system.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	Fundamentals of Information Security	CADC101	<ul style="list-style-type: none"> • To learn the fundamentals of Cryptography and its applications. • To understand the types of malwares. • To learn the ethical issues in information security. 	<ul style="list-style-type: none"> • 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	Data Communication and Networking	CADC102	<ul style="list-style-type: none"> • To learn the architecture of Data communication and networking. • To understand the layerd 	<ul style="list-style-type: none"> • Learn and use the concept of Data communication and Transmission Media • Determine and Discuss the layer 	local developmental needs

			architecture of TCP/IP.	<p>model of OSI and TCP/IP</p> <ul style="list-style-type: none"> • Determine and Elicit the Physical Layer functionalities • List the functionality of Data Link Control Protocols and Observe their applications. • Separate and Assess the functionality of Network Layer and Transport Layer • Observe and Point out the functionality of various Application Layer protocols 	
3	Vulnerability Analysis, Penetration Testing, and Incident Handling	CADC103	<ul style="list-style-type: none"> • To learn the core concepts of Vulnerability Analysis. • To understand the process of penetration testing. • To learn about incident handling technique. 	<ul style="list-style-type: none"> • Identify and analyze vulnerabilities to the networks and applications • Review, recognize and mitigate the vulnerabilities • Comprehend the penetration testing methods and vulnerability types • Apply the methods to detect potential cyber security incidents • Identify and discover the ways to eradicate cyber security incidents • Plan, advise and implement techniques to remove vulnerabilities to the systems and applications 	regional developmental needs
4	Security Strategies in Operating Systems	CADC104	<ul style="list-style-type: none"> • To learn the fundamentals of security strategies in Operating Systems. • To Learn Operating system security tools. 	<ul style="list-style-type: none"> • Observe and Discuss the basics of Information security. • Recognize, Elicit and Apply the Authorization and access control • Observe and Discuss about Laws and Regulations of the privacy policy 	national developmental needs

				<ul style="list-style-type: none"> • Recognize and Apply the fundamentals of security strategies in Operating Systems. • Demonstrate and Practice the concepts of the network security. • Analyze and Evaluate the Operating system security tools 	
5	Network Cyber Security	CADC201	<ul style="list-style-type: none"> • To understand the basics of network cyber security. • To learn the issues in wireless networks and internet. 	<ul style="list-style-type: none"> • Understand and Describe about the basic cyber security and Network security aspects. • Describe and infer about the mechanisms of firewall, intrusion detection system and public cryptography. • Apply various cryptographic techniques and analyze the protocols used. • Compare different types of firewalls • Explore and understand different cyber threats • Understand different defense mechanism and develop a model for a specific problem 	national developmental needs
6	Cyber Forensics	CADC202	<ul style="list-style-type: none"> • To learn the basics of cyber forensics. • To understand the types of cyber forensic systems. 	<ul style="list-style-type: none"> • 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
7	Application Cyber	CADC203	<ul style="list-style-type: none"> • To learn the concepts in application level cyber 	<ul style="list-style-type: none"> • Identify and analyze malicious code in the system and data base 	global developmental

	Security		<p>security.</p> <ul style="list-style-type: none"> To understand the concepts of ethical hacking and cyber laws. 	<ul style="list-style-type: none"> 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 	needs
8	Big Data & IOT Security	CADC204	<ul style="list-style-type: none"> To understand the consequences of security in BigData and IoT. To learn the security mechanisms applied in BigData and IoT. 	<ul style="list-style-type: none"> Observe and Discuss the need of security in IoT. Recognize and Elicit the security mechanisms of IoT Identify and Classify the details of IoT Security Architecture Determine and Correlate the details on Security threat in IoT Perception Layer Determine and Correlate the details on Security threat in IoT Networking Layer Determine and Correlate the details on Security threat in IoT Processing Layer 	regional developmental needs

9	Advanced Ethical Hacking	CADC205	<ul style="list-style-type: none"> • To understand the basics of Ethical hacking. • To learn the types of hacking and DDOS attacks. 	<ul style="list-style-type: none"> • 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. 	<p>global developmental needs</p>
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Name of the Programme: PGDDS

Programme outcomes (PO)

The Diploma in Data Science (PGDDS) is designed to prepare the students for careers in data science. This course is designed to understand, and practice big data analytics and machine learning approaches, which include the study of modern computing big data technologies and scaling up machine learning techniques focusing on industry applications.

Programme Specific Outcomes (PSO) for PGDDS

- i. Implement Data analytics in daily business operations.
- ii. Develop proficiency in statistical analysis of data.
- iii. Able to build and assess data based models.
- iv. Execute Statistical analysis with professional statistical software.
- v. Strengthen skills in data management.
- vi. Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively.

S No	Title of the Paper	Course Code	Course Objectives	Course Outcomes	Relevance
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1	Optimization Techniques	CADD101	<ul style="list-style-type: none"> • To understand the basics of optimization. • To learn about linear programming, randomized optimization and genetic algorithms. 	<ul style="list-style-type: none"> • 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 management and Game theory problems. 	local, regional ,national and global developmental needs
2	Introduction to Data Science	CADD102	<ul style="list-style-type: none"> • To learning the founding principles of Datascience. • To learn Artificial intelligence concepts, searching and learning algorithms. 	<ul style="list-style-type: none"> • 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, searching and learning algorithms. • Identify and illustrate the methods and techniques commonly used in data science. 	local, regional ,national and global developmental needs

				<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • To learn about the basics of Data warehouse and data mining. • To understand clustering and web mining. 	<ul style="list-style-type: none"> • 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 	local, regional ,national and global developmental needs

				<p>specific problem.</p> <ul style="list-style-type: none"> • Identify and Apply real-world problems in business and scientific information using data mining techniques • Draft and Build statistical predictive models using various techniques such as neural networks, decision trees and logistic regression. 	
4	Applied Probability and Statistics	CADD104	<ul style="list-style-type: none"> • To learn the basics of probability. • To learn the basics of statistics. 	<ul style="list-style-type: none"> • Be acquaint with the basic concepts and applications of statistics data • Apply probability and linear regression methods to solve the simple / complex real world problems. • Correlate and use the Multiple Linear regression approach to determine the mathematical relationship among random variables. 	local, regional ,national and global developmental needs

				<ul style="list-style-type: none"> • Understand the process of developing a probabilistic model that best describes the relationship between dependent and independent variables. • Examine the differences between all the variable use in the experiment • Perform ANOVA test and infer the conclusion for a given data set 	
5	Introduction to Data Analytics	CADD201	<ul style="list-style-type: none"> • To learn the basics of Data Analytics. • To understand the Data Analytics Techniques. 	<ul style="list-style-type: none"> • Observe and Discuss the relevance of python in Data Analytics. • Recognize and Use the numpy package in python for data analytics. • Observe, Draft and Develop data Manipulation applications using pandas. • Enumerate and Practice hierarchical indexing in pandas. 	local, regional ,national and global developmental needs

				<ul style="list-style-type: none"> • Devise and Create data visualization with MATPLOTLIB. • Identify and Integrate various components of python to perform data analytics. 	
6	Machine Learning	CADD202	<ul style="list-style-type: none"> • To learn the concepts of machine learning. • To understand association rules, classification and prediction techniques. 	<ul style="list-style-type: none"> • 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 • Demonstrate and analyse the clustering methods • Propose solution for real word problems 	local, regional ,national and global developmental needs
7	Deep Learning	CADD203	<ul style="list-style-type: none"> • To understand Linear Regression and Regularization. • To learn the concepts of 	<ul style="list-style-type: none"> • Observe and Apply the concepts of Deep Learning and its applications 	local, regional ,national and global developmental needs

			Deep Learning and its applications.	<ul style="list-style-type: none"> • 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 	
8	Technologies for Data Science	CADD204	<ul style="list-style-type: none"> • To understand the technologies in data science. • To learn the concepts of Hadoop, Map-Reduce, HIVE, SQOOP and PIG. 	<ul style="list-style-type: none"> • 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 	local, regional ,national and global developmental needs

				<ul style="list-style-type: none"> • 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 	
9	Big Data in Internet of Things	CADD205	<ul style="list-style-type: none"> • To learn the role of Big Data in IoT. • To understand the concepts of data in cloud and edge. 	<ul style="list-style-type: none"> • Observe and Discuss the role of Big Data and IoT. • Recognize and Correlate the Big Data and analytics in the real world. • Observe, Analyze and Evaluate the Big Data framework like Hadoop and NOSQL to efficiently store and process Big Data to generate analytics. • Understand and Apply the application areas of IOT • Determine and Justify the revolution of IoT Devices. 	local, regional ,national and global developmental needs

				<ul style="list-style-type: none">• Identify and Demonstrate the building blocks of Internet of Things and characteristics.	
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