



THE MADURA COLLEGE

An Autonomous Institution affiliated to Madurai Kamaraj University

Re-accredited (3rd cycle) with 'A' grade by NAAC

Vidya Nagar, T.P.K. Road, Madurai – 625 011

DEPARTMENT OF MATHEMATICS

Course Outcomes mapped with POs

PROGRAMME : B.Sc. (Mathematics)

Course Code	Course Title	CLO	Mapping of CO with PO				
			PO1	PO2	PO3	PO4	PO5
20U1TLA1	இக்கால இலக்கியம்	கவிதைகள் வெளிப்படுத்தும் மனித அன்பு, பெண்நிலைகள், மொழியின்சிறப்பு, தொழிலாளர் நிலை போன்றவற்றை அறியச் செய்தல்.	-	1	1	2	2
		கவிதைகளின் கருத்துப் பரிமாற்றம், உயர்மனிதச் செயல்பாடுகளை ஊக்குவித்து நடைமுறையில் பின்பற்றல்.	-	2	2	3	2
		கதையின் உள்ளடக்கம்,வடிவம் -மாந்தர் எண்ணம், உணர்வு, நடத்தை, சமூகப் பண்பாட்டுச் செயல்பாட்டில்- ஈடுபடுதல்.	-	3	1	-	2
		இலக்கிய வரலாற்றை நிரல்படுத்திப் படைப்பாளிகளின் அறிவுத்திறத்தில் ஈடுபடச்செய்தல்.	3	-	1	-	2
		மொழியின் சிறப்புகளைத் தொகுத்தல். படைப்பூக்கத்துடன் பிழை நீக்கித் தனித்துவமாக எழுதத் தூண்டல்.	-	-	3	-	2
20U1HLA1	HINDI 1	Use of singular, plural, numbers	-	1	1	2	2
		Use of sentences and choosing the right answer	-	2	2	3	2
		Able to translate and correct the sentences	-	3	1	-	2
		Able to write answers questions from prose	3	-	1	-	2
		Able to identify directions and seasons	-	-	3	-	2
20U1SLA1	SANSKRIT I	Gain basic knowledge about Devanagari Script and understand Male/ Female/ Neuter Gender Words	-	1	1	2	2
		Identify Person/Number/Tense	-	2	2	3	2
		Know to substitute word without affecting Number / Tense/ Grammar and to enhance students attitude towards good behaviour through Subhashitani (Good says)	-	3	1	-	2
		Understand the Sanskrit Literature like Vedas, Vedangas and Epic Literature	3	-	1	-	2
		Translate from Sanskrit to English in Present / Future Tense	-	-	3	-	2

20U1NEN1	ENGLISH-I	Use proper Parts of Speech while framing simple sentences	-	2	3	2	-
		Express practical skills of various types of writing dialogues and comprehend content in English	-	2	3	3	-
		Use proper tense forms in sentences and Classify kinds of sentences; convert from one type to another.	-	2	2	2	-
		Fill different challans , issue cheques, fill railway form in real life contexts and prepare advertisements on their own.	-	2	2	2	-
		Appreciate a literary work for its genre and evaluating ideas. To use language skills necessary for social,academic and professional purposes	-	2	3	3	-
20U1VEN1	VALUE EDUCATION AND PROFESSIONAL ETHICS	Describe the various value system and its familiarity	3	-	2	2	3
		List forty virtues and eighty values	3	-	2	2	3
		Outline the foundations on value oriented moral values	3	-	2	2	3
		Focus on relevance of various religion values and its similarities	2	-	2	2	3
		Build a value system and ethics in Education, Business and Teaching	3	2	2	2	3
20U1MMC1	CALCULUS	Recall the basic concepts in differentiation and get the knowledge of p-r equation, Curvature, Radius of curvature, involutes, Evolutes, Envelope and apply it in problems.	2	2	-	2	1
		Understand the idea of Asymptotes, Tracing of curves Folium of Descartes- cycloid-cardioid and Lemniscate and its related problems	1	1	-	-	2
		Recall integration of by parts. Derive reduction formulae for trigonometric functions in integration process	1	-	-	-	1
		Use the knowledge of double and triple integrals for finding area and volume	2	1	-	1	2
		Acquire the information about beta, gamma function and evaluate it in various problems.	2	-	-	-	2
20U1MMC2	CLASSICAL ALGEBRA AND TRIGONOMETRY	Find the roots from the relation between roots and coefficients of various equations	3	2	-	-	2
		Determine the roots by studying the nature of equations, Solving Reciprocal equations and Transformations of equations	3	2	-	-	2
		Solving the various types equation using different techniques, viz., diminishing the roots, transforming the equation to Quadratic equation.	3	2	-	-	2
		Solving the various types equation using different techniques, viz., diminishing the roots, transforming the equation to Quadratic equation.	3	2	-	-	3
		Find the relation between trigonometric functions, hyperbolic functions and inverse hyperbolic functions.	3	2	-	-	3
20U1PAC1	ALLIED PHYSICS - I	Connect the principles of elasticity of a body such as tension, compression and shear in construction and allied fields	3	2	-	2	2

		Use the dynamics of fluid motion to solve the practical applications problems.	3	2	2	2	-
		Compare the conduction, convection and radiation process to solve the real life problems.	3	2	2	2	-
		Use the laws of thermodynamics to heat engines.	3	2	2	2	2
		Apply the wave nature of light to real life situations.	3	1	-	1	-
20U1PAP1	ALLIED PRACTICAL	Apply the basic laws of physics to determine the various properties of the given materials.	1	3	-	-	-
		Apply knowledge of physics and mathematics to derive solution for various problems.	1	3	2	-	-
		Use the basic laws to study the elastic properties of solids and thermal properties of liquids and solids.	1	3	1	-	-
		Applies logic gates to form simple circuits.	1	3	2	-	-
		Analyse the property of the material by experimenting in different methods.	-	3	2	-	-
20U2TLA2	இடைக்கால இலக்கியமும் உரைநடையும்	சுற்றிலக்கியங்கள் குறித்த அடிப்படைக் கருத்துகளைப் பெறுவர்.	1	-	3	-	2
		பக்தி இலக்கியங்கள் வெளிப்படுத்தும் சமயம் சார்ந்த செய்திகளைப் புரிவர்.	-	-	2	-	3
		சைவ வைணவ சித்தாந்த இறை தத்துவக் கருத்துகளைத் தெரிந்து நடைமுறைப்படுத்திக்கொள்வர்.	1	-	3	1	2
		இலக்கிய வரலாறு தரும் வாழ்வியல் கருத்துகளைப் பொருத்திப் பார்க்கும் திறன் பெறுவர்.	2	1	3	1	3
		மொழியின் நுட்பங்களின் மூலமாக ஆளுமைத் திறனை வளர்த்துக் கொள்வர்.	-	-	3	1	1
20U2HLA2	HINDI 2	Write stories and draft letter	1	-	3	-	2
		Use of proverbs and phrases in communication	-	-	2	-	3
		Learning morals from great Indian leaders	1	-	3	1	2
		Writing essays with creativity	2	1	3	1	3
		Using proverbs in speech and having knowledge of days in Hindi	-	-	3	1	1
20U2SLA2	SANSKRIT II	Gain basic knowledge about the origin of Sanskrit Kavya Literature	1	-	3	-	2
		Understand Sanskrit Poetic Literature and Style of Writing Poems	-	-	2	-	3
		Compare Poetic Literature with Modern Life and to classify and discuss the importance of early literature	1	-	3	1	2
		Practice creativity and demonstrate different aspects of life as portrayed in Sanskrit Literature	2	1	3	1	3
		Learn Sanskrit Bhakti Literature and Tamil Chemmozhi Literature at basic levels	-	-	3	1	1
20U2NEND2	ENGLISH-II	Use linkers to compose a coherent paragraph and to examine language skills through core subjects	-	2	3	2	-

		Use singular, plural, present and past tenses. 'will' and 'going to' to engage in meaningful conversations and writing tasks	-	2	3	3	-
		Classify appropriate pronunciation for "c" as "s", "k" and "ch" and classify letters / sound "p, b, th, v, w, tion" appropriately.	-	2	2	2	-
		Demonstrate practical skills of various types of media writing and reports Use appropriate expressions, ask for favor, offer suggestions and engage in meaningful telephonic conversations	-	2	2	2	-
		Appreciate a literary work for its genre and evaluating ideas.	-	2	3	3	-
20U2EVS1	ENVIRONMENTAL SCIENCE & GENDER STUDIES	Able to list out various ecosystems and their interactions	2	-	-	1	3
		To appreciate the nuances behind food webs and food chains	2	-	2	1	3
		Able to differentiate the importance of Hotspots and mega diversity centres.	2	3	-	1	3
		Able to identify different types of pollutions and provide solutions	2	-	-	3	3
		To analyze and identify the behavioral problems among student community with reference to gender.	2	3	-	3	3
20U2PAC2	ALLIED PHYSICS -II	Apply Kirchoff's laws to analyze circuits involving resistance, capacitance and voltage source including ac and dc Wheatstone's bridges	3	2	-	2	-
		Use Laws of electromagnetic induction to day to day life appliances like induction stove, transformer, choke etc.,	3	2	-	2	-
		Analyse the Physics of particles at the atomic and nuclear scale and appreciate the implications of the Bohr model of the atom, X-ray diffraction, nuclear stability and radioactivity	3	-	2	2	2
		Understand the principle working and operation of rectifiers, regulators, oscillators and amplifiers along with characteristic parameters of operation and their construction from basic active semiconductor devices like diodes and transistors.	3	2	2	2	2
		Apply principle of Boolean algebra for simplification and realization of digital circuits using logic gates.	3	2	2	2	2
20U2PAP2	ALLIED PRACTICAL	Apply the basic laws of physics to determine the various properties of the given materials.	1	3	-	-	-
		Apply knowledge of physics and mathematics to derive solution for various problems.	1	3	2	-	-
		Use the basic laws to study the elastic properties of solids and thermal properties of liquids and solids.	1	3	1	-	-
		Applies logic gates to form simple circuits.	1	3	2	-	-
		Analyse the property of the material by experimenting in different methods.	-	3	2	-	-

20U2MMC3	ANALYTICAL GEOMETRY OF THREE DIMENSION AND VECTOR CALCULUS	Understand the basic concept of plane. Compute angles between two planes and bisectors of two planes. Understand the basic concept of sphere	2	1	-	-	-
		Know the concept of sphere – Evaluate tangent line and tangent plane and section of sphere.	1	2	-	-	1
		Obtain the geometrical knowledge of cone and Cylinder. Determine equations of cone, right cone, cylinder and right circular cylinder.	1	2	-	-	1
		Acquire the idea of gradient, divergence, curl, solenoidal and irrational of vectors. Use vector differentiation in solving problems	3	-	-	1	-
		Discuss about green's, Stoke's, Gauss Divergence theorem and apply it in solving various problems.	2	3	-	1	2
20U2MMC4	DISCRETE MATHEMATICS	Determine union, intersection, symmetric difference and Cartesian product of sets and also apply the principle of Mathematical induction to prove certain mathematical formula.	3	-	-	-	-
		Recognize equivalence relations and to categorize types of functions.	2	-	2	-	-
		Analyze the validity of a formula using mathematical logic and also to find normal forms of a formula	2	1	3	-	-
		Construct and solve recurrence relations using generating functions	2	-	-	-	-
		Classify types of matrices and also to solve linear equations by applying matrices.	1	-	2	-	1
20U2NCC1	INTRODUCTION TO NCC	Understand the structure, organization of NCC and armed forces.	2	1	1	2	2
		Develop leadership qualities and general knowledge from current affairs.	2	1	1	1	2
		Involve in social service activities and act in the emergency situation.	2	1	1	2	1
		Develop qualities like character, comradeship and discipline through regular training and field work.	2	1	1	1	2
		Improve secular outlook, spirit of adventure, ethics and ideals of selfless service.	2	1	1	1	2
20U2NPN	INTRODUCTION TO NATIONAL SERVICE SCHEME	To understand the aims and principles of NSS , the duties and responsibilities of an NSS volunteer to the society.	2	1	2	3	3
		To know the administrative structure of NSS, its plans and its execution.	2	1	2	3	3
		To acquire leadership qualities and democratic attitudes through the participation in various social activities	2	1	2	3	3
		To aid in character building and develop qualities like comradeship and discipline through regular training and field work.	2	1	2	3	3
		To develop the spirit of humanity and ideals of selfless service.	2	1	2	3	3
20U2YRC1	INTRODUCTION TO YOUTH RED CROSS	Equip to conduct social and health awareness programmes.	2	1	1	2	3
		Making awareness regarding red cross service and social activities	2	1	1	2	3

		Encourage and to youth members and other students to contribute in red cross activities.	2	1	1	2	3
		Develop qualities like compassion, kindness and caring sense through regular training and field work.	2	1	1	2	3
		Improve kind heartedness, spirit of humanity and ideals of selfless red cross service	2	1	1	2	3
20U2PED1	HISTORY OF PHYSICAL EDUCATION	Know physical education in national and international level.	2	1	1	2	2
		Understand ancient Olympics, modern Olympics, first aid and yoga	2	1	1	1	2
		Comprehend games rules and ground measurements	2	1	1	2	1
		Develop their physique in good shape through regular work outs and exercises.	2	1	1	1	2
		Realize the need of physical education.	2	1	1	1	2
20U3TLA3	காப்பிய இலக்கியமும் நாவலும்	மனித அறம், அன்பு, செய்ந்நன்றி போன்றவற்றை அறியச் செய்தல்.	-	1	1	2	2
		அற மனப்பாங்கினை ஊக்குவித்துப் பின்பற்றல்.	-	2	2	3	2
		மனித அறம், பத்தி, உதவி செய்யும் மனப்பான்மை போன்றவற்றில் ஈடுபடுதல்.	-	3	1	-	2
		காவிய ஆசிரியர்களின் படைப்புதிறனை வெளிப்படுத்த வடிவ அமைப்பினை விளக்கி ஈடுபடச் செய்தல்.	3	-	1	-	2
		படைப்பின் பல் வடிவங்களை விளக்கிப் படைப்பாக்கத்தினை வெளிக் கொணரல்.	-	-	3	-	2
20U3HLA3	HINDI 3	Identify noun, pronoun and adjective in sentences	-	1	1	2	2
		Examine how a text interacts with a reader in the reading process for meaning and interpretation	-	2	2	3	2
		Classify rhymes, beats, sound pattern in a poem	-	3	1	-	2
		Explain various aspects of storytelling in terms of plot, character and form in One Act play	3	-	1	-	2
		Write simple sentences without committing errors of spelling and grammar	-	-	3	-	2
20U3SLA3	SANSKRIT III	Gain knowledge of Indian Tradition through the origin of Popular Sanskrit Tales and Fables	-	1	1	2	2
		Achieve Moral Values through Sanskrit Fables – Pancatantra	-	2	2	3	2
		Comprehend Sanskrit Poetic Literature, Style of Writing Poems and Know the deepness of Indian Sanskrit Prose Literature	-	3	1	-	2
		Understand the Sanskrit Prosody through Alankaras	3	-	1	-	2
		Learn Sanskrit Prose Literature and Style of Writing Prose	-	-	3	-	2
20U3NEND3	ENGLISH-III	Discover the deviant use of English both in written and spoken forms	-	2	3	2	-
		Explain the need for reference/study skills	-	2	3	3	-
		Make/take notes systematically in an organized manner	-	2	3	3	-

		Choose language for speaking with confidence in an intelligible and acceptable manner	-	2	2	2	-
		Develop an interest for reading and read independently unfamiliar texts with comprehension	-	2	2	2	-
		Examine and analyze a genre on their own	-	2	3	3	-
20U3CAC1	ALLIED CHEMISTRY I	To discuss atomic models, and occupancy of electrons on various quantum levels.	3	2	2	1	1
		To illustrate the overlapping of orbitals and hybridization of simple molecules	3	2	2	-	1
		To find the importance of organic compounds in daily life and to describe the types of organic reactions	3	2	1	1	-
		To inspect the types of adsorption and factors affecting the process	3	2	1	2	1
		To identify the characteristics of catalyst and to explicate the types of catalysis	3	2	1	1	2
20U3CAP1	SEMI-MICRO QUALITATIVE ANALYSIS	To demonstrate the basic laboratory techniques of qualitative analysis.	3	2	-	-	-
		To demonstrate mastery of basic semi-micro qualitative analysis of simple salts containing one anion and one cation.	3	2	-	-	-
		To identify the interfering acid radical, eliminate interfering anion and to perform a systematic analysis	3	2	-	-	-
		To systematically analyse the general group cations.	3	2	-	-	-
		To infer analytical data and make scientific claims that is supported by their results and other observations.	3	2	2	1	1
20U3MSM1	SKILL BASED ELECTIVE-I MATHEMATICS FOR COMPETATIVE EXAMINATIONS – I	Important facts - Present ages - Age ratio - Some related problems - Definition in Percentage - Important facts and Formulae - Results on populations - Results on depreciation - Difference percentage - Some other related problems.	3	-	-	-	-
		Important facts and Formulae - Calculate cost and selling price - Calculate Gain and Loss - Problems - Ratio -Proportion – Important facts and Formulae - Types of Proportional - Comparison and Compound ratio - Variation - Related problems.	2	-	2	-	-
		Time and work - Important facts and Formulae - Days and hours calculations - problems - Pipes and Cistern - Important facts and Formulae - Two or more pipe calculations - Problems.	2	1	3	-	-
		Time and Distance - Important facts and Formulae - Calculation Speed and Distance - Related problems- Problems on Trains -Important facts and Formulae - Calculate train speed and distance - Problems.	2	-	-	-	-
		Simple interest - Important facts and Formulae - Principal Interest calculation Compound interest - Important facts and Formulae -	1	-	2	-	1

		Calculate Compound interest annually, half-yearly and quarterly – Some related problems.					
20U3MMC5	MATHEMATICAL STATISTICS	Learn about Probability, Conditional probability, Bayes's theorem	3	3	2	3	2
		Understand the concepts of discrete and continuous type random variables, distribution/density functions and find variants: joint, marginal, conditional probability distribution/density functions	3	3	2	3	2
		Apply techniques to find Expectation, Variance, Covariance and of random variables and linear combinations of random variables	3	3	2	3	3
		Know about t-, F, χ^2 -distributions, and find Type I Type II errors, Critical region, level of significance and Large sample test	3	3	2	3	2
		Know how to do small sample test based on t,F, χ^2 distributions	3	3	2	3	2
20U3MMC6	GRAPH THEORY	Identify various types of sub graphs of a graph, to find degree sequence of a graph, to identify isomorphic graphs, to determine connectedness of a graph, to list out cut-vertices and cut-edges of the given graph	3	-	-	-	-
		Determine whether graphs are Hamiltonian and/or Eulerian	2	-	2	-	-
		Recognize bipartite graphs, to find various matrices representing a graph, to determine vector spaces associated with a given graph and also to solve problems involving Matchings and trees.	2	1	3	-	-
		Identify planar graphs, to find dual of a plane graph	2	-	-	-	-
		Find minimum vertex and edge coloring of certain families of graphs	1	-	2	-	1
20U4TLA4	பண்டைய இலக்கியமும் நாடகமும்	பண்டையகால மக்களின் அகம் மற்றும் புறம் சார்ந்த வாழ்வியல் நிலைகளை அறியச்செய்தல்.	-	1	1	2	2
		தனிமனித அறம், பொது அறம் ஆகியவற்றை நீதிநூல்களின் வாயிலாக அறியச்செய்தல்.	-	2	2	3	2
		நாடகம் தொடர்புடைய சிந்தனைகள், உணர்வுகள், உள்ளடக்கம், நடை போன்றவற்றைப் புரியவைத்தல். நாடகம் நடிக்கப் பழக்குதல்.	-	3	1	-	2
		தமிழ் இலக்கிய வரலாற்றையும் பண்பாட்டையும் அறியச்செய்தல்.	3	-	1	-	2
		மொழியின் சிறப்புகளுடன், அகப்பொருள் மற்றும் புறப்பொருள்களின் திணை, துறைகளை அறியச்செய்தல்.	-	-	3	-	2
20U4HLA4	HINDI 4	Apply speak, read and write Hindi at the basic level.	-	1	1	2	2
		Identify rhyme, beats, sound pattern in a poem.	-	2	2	3	2
		Analyse novel closely, paying attention to linguistic and stylistic variations.	-	3	1	-	2
		Use language for speaking with confidence in an Acceptable manner	3	-	1	-	2
		Write simple sentences without committing errors of grammar	-	-	3	-	2
20U4SLA4	SANSKRIT IV	Learn about the Origin of Indian Sanskrit Drama Literature	-	1	1	2	2

		Achieve Moral Values through Indian Sanskrit Drama Literature – Karnabharam	-	2	2	3	2
		Realize Sanskrit drama Literature, method of Writing Dramas and the depth of Indian Sanskrit Drama Literature	-	3	1	-	2
		Understand the importance and role of Sanskrit drama Literature and know great Dramatists	3	-	1	-	2
		Learn Ethical Values of Human Life through Various Authors and their Dramas	-	-	3	-	2
20U4NEN4	ENGLISH-IV	Examine their own ability to improve their own competence in using the language and Show their learnt useful interpersonal soft skills.	-	2	3	2	-
		Re-state a piece of text either orally or in writing with learnt soft skills	-	2	3	3	-
		Apply their useful creative skill in writing like CVs, drafting and reading	-	2	2	2	-
		Investigate the importance of writing in academic life, analyze graphs, charts, grids and other visual supports to understand a text.	-	2	2	2	-
		Apply connecting ideas to continue discussions and apply diagrammatic information – interpretations maps, graphs, pie- charts and note-taking. Communicate with others effectively.	-	2	3	3	-
20U4CAC2	ALLIED CHEMISTRY II	To analyse the relative strength acids and bases and buffer action	3	2	1	-	-
		To indicate structure of carbohydrates and figure out the configuration of glucose	3	2	1	-	-
		To classify proteins, vitamins and to explain the sources, functions and deficiency of vitamins A, D, & B, C and illustrate the preparation, properties and uses of glycine	3	2	1	-	-
		To illustrate types of the polymers and to indicate types of the corrosion and its control measures	3	2	1	-	-
		To understand the role of various elements in plant growth and to classify the fertilizers	3	2	1	-	-
20U4CAP2	SEMI-MICRO QUALITATIVE ANALYSIS	To demonstrate the basic laboratory techniques of qualitative analysis.	3	2	-	-	-
		To demonstrate mastery of basic semi-micro qualitative analysis of simple salts containing one anion and one cation.	3	2	-	-	-
		To identify the interfering acid radical, eliminate interfering anion and to perform a systematic analysis	3	2	-	-	-
		To systematically analyse the general group cations.	3	2	-	-	-
		To infer analytical data and make scientific claims that is supported by their results and other observations.	3	2	2	1	1
20U4MSM2	SKILL BASED ELECTIVE-II	In solving questions by chain rule, we compare every item with the term to be found out. Exploring the characteristics of the Logarithm and its applications.	2	-	-	-	1

	MATHEMATICS FOR COMPETATIVE EXAMINATIONS – II	We are supposed to find the day of the week on a given date. For this, we use the concept of odd days. And we give an idea of how to find the ordinary year and leap year.	2	-	-	-	1
		Giving an essential knowledge of factorial notation, permutation, and combination. Exploring the experiment, sample, and event in probability theory and absorbing its applications.	2	-	-	-	1
		Understanding the concept of partnership, stock, and shares of the business or industry. With this concept, business-oriented problems are analyzed.	2	-	-	-	1
		Exploring real discounts and bankers discounts and applying this concept to various real-life problems.	2	-	-	-	1
20U4MMC7	SEQUENCE AND SERIES	Recall the basic concepts in Sets and Functions and get the knowledge of Bounded sets and least upper bound and greatest lower bound.	2	2	-	2	1
		Understanding the concept of sequences, bounded, monotonic sequence, convergent, divergent and Oscillating sequence.	3	1	-	1	2
		Understanding the knowledge of subsequence, limit points and behavior of Monotonic sequences.	2	1	1	1	2
		Understanding the concept of Inequalities and Recognize when the series converges and diverges.	2	1	-	1	1
		Acquire the information about Alternating series and Absolute convergence series.	3	2	1	1	2
20U4MMC8	DIFFERENTIAL EQUATIONS	Learn various techniques of getting exact solutions of certain solvable first order non-linear ODE's and linear ODE's of second and higher Orders	3	3	2	3	2
		Grasp the concept of a general solution of a linear ODE of second order with variable coefficients and also learn a few methods to obtain the general solution of such equations.	3	3	2	3	2
		Apply a range of techniques to solve first order linear and non-linear PDE's. ODE's.	3	3	2	3	3
		Learn about general solution of first order linear PDE's using the Lagrange's method.	3	3	2	3	2
		Know how to solve first order non-linear PDE's using Charpit's method	3	3	2	3	2
20U4NCC2	FIELD TRAINING IN NCC	Understand the geography, important world organizations and will do various drills with & without arms.	2	2	1	2	2
		Read maps and related sign systems.	2	1	1	2	1
		Comprehend the types of weapons, field crafts and battle crafts.	2	1	1	2	2

		Develop qualities like character, comradeship and discipline through regular training and field work.	2	1	1	1	2
		Improve secular outlook, spirit of adventure, ethics and ideals of selfless service.	2	1	1	1	2
20U4NPN	COMMUNITY SERVICES	To provide an opportunity to become responsible members of the society by taking part in community service.	2	2	1	3	2
		To enable students acquire life skills and knowledge, through the involvement in environmental awareness activities	2	2	1	3	2
		To understand gender difference and learn to give equal respect to members of the opposite gender, develop service spirit and participate collectively in community programmes.	2	2	1	3	2
		To develop qualities like compassion, kindness and caring sense through regular training and field work in health awareness programmes.	2	2	1	3	2
		To become responsible citizens with a sound knowledge of the Indian Constitution and Fundamental Rights and be prepared for selfless service to the community.	2	2	1	3	2
20U4YRC4	INTRODUCTION TO YOUTH RED CROSS	Equip to conduct social and health awareness programmes.	2	1	1	2	3
		Making awareness regarding red cross service and social activities	2	1	1	2	3
		Encourage and to youth members and other students to contribute in red cross activities.	2	1	1	2	3
		Develop qualities like compassion, kindness and caring sense through regular training and field work.	2	1	1	2	3
		Improve kind heartedness, spirit of humanity and ideals of selfless red cross service	2	1	1	2	3
20U4PED2	PHYSICAL EDUCATION AND GAMES	Understand the meaning, benefits and essentials of yoga and meditation.	2	1	1	2	2
		Maintain good physical and mental health by doing exercises, yoga and by taking nutritive foods.	2	1	1	1	2
		Know the rules and regulations of games like boxing, fencing, judo, basketball, cricket, hockey.	2	1	1	2	1
		Develop their physique in good shape through regular work outs and exercises.	2	1	1	1	2
		Realize the need of physical education.	2	1	1	1	2
20U5MSM3	SKILL BASED ELECTIVE-III BIO STATISTICS	Remembering the basic concepts on Population and Sample	3	-	-	-	-
		Understand the idea of Descriptive Statistics	2	-	2	-	-
		Analyzing the concept of Theory of attributes	2	1	3	-	-
		Studying the concepts of ANOVA	2	-	-	-	-
		Analyzing the concept of Correlation and Regression	1	-	2	-	1

20U5MMC9	REAL ANALYSIS	Understanding the basic definitions of Upper and lower bounds and axioms on real number system, absolute values and the triangle inequality.	3	3	3	2	1
		Use the concept of metric space and Bounded sets with examples.	3	3	3	2	1
		Identify the basic ideas of Closed, Dense sets and Limit point with examples.	3	3	3	2	1
		Identify the concept of continuity and Discontinuous functions on R.	3	3	3	2	1
		Analyzing the concept of Connectedness and compactness in metric space.	3	-	3	2	1
20U5MMC10	OPTIMIZATION TECHNIQUES	Understand the theoretical workings of canonical and standard form and simplex method for linear programming and demonstrate their iterations.	3	3	2	3	2
		Formulate the specialized linear programming problems like the transportation and Assignment problems ,Dual problems using appropriate method.	3	3	2	3	2
		Explain the various costs related to inventory system and understand the various selective inventory control techniques and its applications.	3	3	2	3	-
		Decide an optimal replacement period/policy for a given item/ equipment / machine.	3	3	2	3	2
		Find the constructions of networks of a project and optimal scheduling using CPM and PERT.	3	3	2	3	2
20U5MMC11	ABSTRACT ALGEBRA	Learn about Groups, Subgroups with examples, Properties of groups and subgroups	3	3	3	2	2
		Demonstrate knowledge and understanding of the concept of cosets of a subgroup of a group, Quotient group and normal subgroups.	2	2	2	3	1
		Learn about Homomorphism, Isomorphism and Automorphism of Groups	2	3	2	3	3
		Demonstrate knowledge and understanding of rings, fields and their properties.	2	2	1	2	1
		Understand and prove fundamental results and solve algebraic problems using appropriate techniques to improve skill development	3	3	3	3	2
20U5MME1(A)	MAJOR ELECTIVE – I PROGRAMMING WITH C++	Use the code that includes the reuse of both exist in code and calling functions in the C++ libraries	3	2	2	-	3
		Demonstrate an understanding of the overall syntax and semantics of C++ programs by writing small programs from specifications given in Class.	3	2	2	-	3
		Explain constructors to initialize the object with the default or initial state.	3	2	2	-	3

		Apply the overloading to provide a special meaning of an operator for a user-defined data type.	3	2	2	-	3
		Analyze code that includes the reuse of both existing code and calling functions in the C++ libraries by applying Inheritance concept	3	2	2	-	3
20U5MME1(B)	MAJOR ELECTIVE – I PROGRAMMING WITH JAVA	Discuss the basic oops concept, evaluation and implementation overview of java.	-	2	3	2	3
		Design the applications using classes, inheritance, packages and interface.	-	2	2	2	3
		Use the exception handling, multithreading and string handling concepts in various applications.	-	2	2	2	3
		Analyze the concept of I/O in Java.	-	2	3	2	3
		Able to perform applet programming designing HTML, Java Swing and Java Bean based programs.	-	2	3	2	3
20U5MME1L(A)	MAJOR ELECTIVE – I PRACTICAL IN C++	Write code that includes the reuse of both existing code and calling functions in the C++ libraries	3	2	2	-	3
		Demonstrate an understanding of the overall syntax and semantics of C++ programs by writing small programs from specifications given in Class	3	2	2	-	3
		Use constructors to initialize the object with the default or initial state.	3	2	2	-	3
		Apply the overloading to provide a special meaning of an operator for a user-defined data type.	3	2	2	-	3
		Write code that includes the reuse of both existing code and calling functions in the C++ libraries by applying Inheritance concept	3	2	2	-	3
20U5MME1L(B)	MAJOR ELECTIVE – I PRACTICAL IN JAVA	Able to understand concept of Object Oriented Programming & Java Programming constructs.	1	3	-	-	-
		Able to identify basic concepts of Java such as operators, classes, objects, inheritance, packages and Enumeration	1	3	2	-	-
		Apply the concept of exception handling and Input/output Operations.	-	3	1	-	-
		Able to design the application of Java and Java applet	1	3	2	-	-
		Use the concept of Event Handling, Abstract windows toolkit, Java Bean and Java Swing.	-	3	2	-	-
20U5MMDC	OPERATIONS RESEARCH AND WEB TECHNOLOGY	Understand the characteristics and classification of Queuing model.	3	3	2	3	2
		Ascertain the behaviour of Poisson Queue and its relative model.	3	3	2	3	2
		Formulate scientific and commercial problems to a mathematical model and analyse it to arrive at a solution.	3	3	2	3	3
		Study the organizational structure, types of organization and the principles of management.	3	3	2	3	2
		Get to know the basics of internet Access and web technology.	3	3	2	3	2

20U6MSM4	SKILL BASED ELECTIVE - IV LOGISTICS AND SUPPLY CHAIN MANAGEMENT	Understand the logistical decisions (e.g., facilities, inventory, and transportation) impact the performance of the firm as well as the entire supply chain. Identify and Analyze Business Models, Business Strategies and corresponding Competitive advantage and to provide a brief overview of the set of activities that make up the logistics process.	3	3	2	3	2
		Analyze how supply chain decisions related to facility location can be applied to various industries and designing the supply chain and the relationship between Supply Chain Management and Integrated Logistics.	3	3	2	3	2
		Formulate and understand the importance of transportation in logistics management.	3	3	2	3	2
		Solve Transportation and Assignment Problems.	3	3	2	3	3
		Apply sequencing algorithm and find the solution of problem	3	3	2	3	2
20U6MMC12	COMPLEX ANALYSIS	Acquire the fundamentals of constructing analytic functions and Conformal mapping	2	3	2	2	3
		Analyze the properties of bilinear transformations	3	3	2	2	2
		Prove standard theorems such as Cauchy's theorem and their higher derivatives	2	3	2	2	3
		Expand the function in terms of Taylor's series and Laurent's Series	3	3	2	1	2
		Use the residue theorem to compute several kinds of definite Integrals	2	3	2	2	2
20U6MMC13	MECHANICS	Understand the theory of forces, types of forces, triangle law of forces, Lami's theorem and Varignon's theorem.	3	-	-	-	-
		Use the concept of forces in rigid body and also enlarge the concept of friction in a rough inclined plane.	2	1	2	-	-
		Understand the concept of Projectiles, Motion on inclined plane theorems and Problems.	2	-	3	-	-
		Analyzing the various type of impact and loss of kinetic energy in different type of impact.	2	-	-	-	-
		Explain the basic concept of Simple harmonic motion in a straight line, Motion under the action of central forces, Velocity and acceleration in polar coordinates, Differential equation of central orbit -and Pedal equation of central orbit and also Inverse Square law.	1	3	2	-	1
20U6MMC14	LINEAR ALGEBRA	Understand Vector Spaces and Subspaces and apply their properties	3	3	3	2	2
		Characterize a set of vectors in terms of linear combinations, their span and how they are related geometrically	2	2	2	3	1
		Create orthogonal and orthonormal bases using Gram-Schmidt's orthogonalization process and use bases and orthonormal bases to solve application problems	2	3	2	3	3

		Identify Linea transformations of finite dimensional vector spaces and to compute rank, nullity of a given linear transformation	2	2	1	2	1
		Applying the principles of matrix algebra to linear transformations and invertible linear transformations	3	3	3	3	2
20U6MME2(A)	MAJOR ELECTIVE- III NUMERICAL METHODS	Understand the numerical methods to find the solution of algebraic equations using different methods under different conditions, and numerical solution of system of algebraic equations.	-	2	3	2	3
		Explain about various interpolation methods and finite difference concepts.	-	2	2	2	3
		Solve a differential equation using an approximate numerical method	-	2	2	2	3
		Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.	-	2	3	2	3
		Acquire understanding the knowledge of difference equation, linear difference equation and Simple applications.	-	2	3	2	3
20U6MME2 (B)	MAJOR ELECTIVE – III OFFICE AUTOMATION	Recognize and use the Office Package software	-	2	3	2	3
		Identify and apply the menus in MS-Word	-	2	3	2	3
		Perform calculations in Microsoft Excel using both manually inputting formulas and built-in functions.	-	2	3	2	3
		Acquire the knowledge of selecting and working with menus, Create charts, create and edit spreadsheets using MS-Excel .	-	2	3	2	3
		Acquire practical knowledge of selecting and working with menus, Create edit slides and create animations, Perform slideshow of MS Power point .	-	2	3	2	3
20U6MME2L (A)	MAJOR ELECTIVE – III PRACTICAL IN NUMERICAL METHODS	Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.	-	3	-	-	-
		Find the numerical methods to obtain approximate solutions to mathematical problems.	1	3	2	-	-
		Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.	1	3	1	-	-
		Analyze and evaluate the accuracy of common numerical methods.	1	3	2	-	-
		Acquire understanding the knowledge of Graphs and their Applications	-	3	2	-	-
20U6MME2L (B)	MAJOR ELECTIVE – III PRACTICAL PRACTICAL IN OFFICE	Acquire practical knowledge of selecting and working with menus and mail merge concept of MS-Word	1	3	-	-	-
		Generate equations, sample calculations, and basic diagrams in Microsoft Word.	1	3	2	-	-

	AUTOMATION	Perform calculations in Microsoft Excel using both manually inputting formulas and built-in functions.	-	3	1	-	-
		Develop the knowledge of selecting and working with menus, Create charts, create and edit spreadsheets using MS-Excel .	1	3	2	-	-
		Acquire practical knowledge of selecting and working with menus, Create ,edit slides and create animations, Perform slideshow of MS Power point .	-	3	2	-	-
20U6MME3(A)	CORE ELECTIVE-IV FOURIER SERIES AND LAPLACE TRANSFORMS	Write given function in terms of sine and cosine terms in Fourier series.	3	2	-	-	1
		Obtain Fourier sine series and the Fourier cosine series in the half range.	3	2	-	-	1
		Determine the first three harmonics of the Fourier series for the values.	3	2	-	-	1
		Find the Laplace transform of a function from the definition of Laplace transform	3	2	-	-	1
		Apply Laplace transform and its inverse to solve initial value differential equations	3	2	-	-	1
20U6MME3 (B)	ASTRONOMY	Understand the various trigonometric formulas for spherical triangles ,the phenomenon of parallax in the celestial objects and effect of the aberration in celestial objects, different coordinated systems to locate the celestial object in space.	3	3	3	2	1
		Explain concept of the motion of celestial objects and find the sidereal time of sunrise when the longitude of the sun on the date is known.	3	3	3	2	1
		Explain how astronomical distance are determined using parallax technique.	3	2	3	2	1
		Find the effect of refraction takes place in celestial bodies.	3	2	3	2	1
		Derive Kepler's Three Laws of Planetary Motion.	3	3	3	2	1
20U6MME4 (C)	FUZZY MATHEMATICS	Illustrate the concept of fuzzy sets and crisp sets and understand the basic concept of fuzziness involved in various systems.	3	3	2	3	2
		Analyze the axioms and build operations on fuzzy sets.	3	3	2	3	2
		Classify the operations on Fuzzy sets and Fuzzy measures and give examples.	3	3	2	3	3
		Explain the concepts of classical logic, connectives, fuzzy logic , logical operations and normal forms .	3	3	2	3	2
		Recognize fuzzy logic membership function and apply rules of inference and inference from various types of fuzzy propositions , analyze the application of fuzzy logic control to real time systems.	3	3	2	3	2
20U6MME4 (D)	THEORY OF INFERENCE AND FORMAL LANGUAGES	Understand the standard logical equivalences and able to prove that two logical expressions are or are not logically equivalent.	3	3	2	3	2
		Identify inference rules to solve problems and translate between narrative arguments and predicate logic.	3	3	2	3	2

	Apply the notions of ordered algebraic structures, including lattices and Boolean algebras.	3	3	2	3	3
	Use basic concepts of formal languages of finite automata techniques and identify different formal language classes and their relationships, an ability to design grammars and automata for different language classes.	3	3	2	3	2
	Design Finite Automata's for different Regular Expressions and Languages and to Construct context free grammar for various languages.	3	3	2	3	2

S. Muthukumar

Chairman/BoS
Dr. S. MUTHUKUMAR
M.Sc., M.Phil., PGDCA, MCA., Ph.D., MISTE
Head of the Department of Mathematics
The Madurai College (Autonomous)
Madurai-625 011