

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS), SIVAKASI – 626 123.

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC, College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH)

DEPARTMENT OF MATHEMATICS

UG DEGREE PROGRAMME IN MATHEMATICS

SYLLABUS 2020

PROGRAMME EDUCATIONAL OBJECTIVES

The Graduates will

PEO1.	be proficient in statistical and computational skills, help them to shine in
	Govt./Private Sectors, Banks, Railways, IT etc.,
PEO2	be excellent in computing ability to comprehend, analyze and design solutions for
1 202.	real life problems and understand the ethical ,social responsibilities.
PFO3	attend confidently the competitive exams and entrance exams like TNPSC,
1205.	SSC,RRB and TANCET/GATE etc.,

PROGRAMME SPECIFIC OUTCOMES

By the Completion of B.Sc MATHEMATICS programme, the learners will be able to

PSO1.	impart knowledge on the basics of core branches of Mathematics like Algebra,
	Analysis, Calculus, Vector Algebra, Trigonometry and Number theory.
PSO2	formulate, convert in to mathematical modelling and apply mathematical
F302.	techniques to solve problems in science and various disciplines.
DSO3	analyse mathematical theorems and apply the concepts to arrive at solutions for
F305.	real life mathematical problems.
PSO/	communicate effectively about Mathematics to both layman and expert audiences
F304.	utilizing appropriate information and communication technology.
PSO5.	work independently and collaborate effectively in team to achieve their goal
PSO6	recognize the importance of adhering to science and its ethical values and become
1500.	a responsible citizen.
	conduct self evaluation and continuously enrich themselves through life-long
PSU/.	
	learning.

பகுதி – I- பொதுத்தமிழ்		
Course Code: BDGT11		Course Title: சங்க இலக்கியமும்
உரைநடையும்		
On successful completion of the course, the learners should be able to		
CO1[K2]	எழுத்திலக்கணம்,சங்க இலக்கியப்பாடல் மற்றும் கட்டுரைகளின் உட்பொருளை எடுத்துரைப்பர்.	
CO2[K3]	சங்க இலக்கியப்பாடல் மற்றும் கட்டுரைகள் பதிவு செய்துள்ளஅகவாழ்வியலைச் சான்றுகளுடன் விளக்குவர்.	
CO3[K4]	சங்க இலக்கியப் பாடல் மற்றும் கட்டுரைகள் பதிவுசெய்துள்ளபுறவாழ்வியலை வரிசைப்படுத்துவர்.	
CO4[K4]	எழுத்திலக்கண விதிகள் மற்றும் பல ஆய்ந்துரைப்பர்.	டைப்பாளர்களின் கருத்துப் புலப்பாட்டுத் திறனை
CO5[K5]	மக்களின் சமுதாய நிலையை இல	க்கியக் கட்டுரைகளின்வழி மதிப்பிடுவர்.

PART – I – HINDI LANGUAGE COURSE		
Course Code: BDGH11		Course Title: HINDI LANGUAGE
		COURSE- I
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the significant contributions of the writers and the basics of grammar in	
writings		
CO2[K2]	2] explain the renowned literary pieces	
CO3[K3]	CO3[K3] identify the techniques and writing style of writers	
CO4[K4]	analyse the literary elements in the works of writers, expand proverbs	
CO5[K5]	CO5[K5] appraise the works of writers	

PART – I – FRENCH LANGUAGE COURSE		
Course Code: BDGF11Course Title: FRENCH LANGUAGE		
		COURSE- I
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic elements of grammar in French and tell time in French.	
CO2[K2]	explain the grammatical concept.	
CO3[K3] use grammar in framing questions in French.		
CO4[K4]	analyse the importance of French in day to day life.	
CO5[K5]	CO5[K5] assess the usage of French grammar in a workplace.	

PART II– ENGLISH		
Course Code: BDGE11		Course Title: ENGLISH FOR COMMUNICATION - I
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the content through the study of language and literature	
CO2[K2]	D2[K2] comprehend and respond to passages, situations and texts	
CO3[K3] apply appropriate vocabulary and construct ideas		
CO4[K4]	analyze the prescribed literary pieces	
CO5[K5] develop grammatical structures accurately and appraise literature		

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Core Course		
Course Code: BDMT11Course Title: CALCULUS AND		Course Title: CALCULUS AND
		TRIGONOMETRY
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of envelopes, curvature of the plane curves, hyperbolic	
	functions and trigonometry.	
CO2[K2]	construct the reduction formulae for various functions	
CO3[K3]	find the area and volume of the surfaces.	
CO4[K4]	simplify the problems of series involving trigonometric functions of multiple	
	angles.	
CO5[K5]	evaluate problems in Calculus.	

Core Course		
Course Code: BDMT12		Course Title: AG3D AND VECTOR
		CALCULUS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of analytical geometry and vector calculus.	
CO2[K2]	describe about the properties of 3D space, scalar and vector valued functions.	
CO3[K3] solve problems in straight line, plane and sphere.		
CO4[K4]	examine Green's, Gauss's and Stoke's theorem for vector valued functions.	
CO5[K5]	evaluate the area and volume of the surfaces.	

Allied Course		
Course Code: BDPH1A	Course Title: FUNDAMENTAL PHYSICS	
	(FOR CHEMISTRY AND MATHEMATICS)	
On successful completion of the course, the learners should be able to		
summarize the basics of photo electricity, transport properties of gases, laws and		
parameters involved in electricity, rotational motion and gravitational laws		
explain photo electric cells, Boy's experiment, laws related to electricity and		
gravitation		
solve simple problems related to pl	hoto electricity, kinetic theory of gases, rotational	
motion, electricity and gravitation		
analyze photoelectricity with resp	bect to various parameters, 'g' using compound	
pendulum and compare the variatio	n of 'g' with respect to latitude, depth and altitude	
evaluate transport properties of g	ases, gravitational parameters, electric field for	
different charge distributions and pa	arameters of rotational motion	
	Allied Course Code: BDPH1A On successful completion of the c summarize the basics of photo el parameters involved in electricity, r explain photo electric cells, Boy gravitation solve simple problems related to pl motion, electricity and gravitation analyze photoelectricity with resp pendulum and compare the variation evaluate transport properties of g different charge distributions and pa	

VALUE ADDED COURSES		
Course Code: BDES11Course Title: ENVIRONMENTAL		Course Title: ENVIRONMENTAL
		STUDIES
On successful completion of the course, the learners should be able to		
CO1[K2]	recognize the importance of environment and role of individual in its protection.	
CO2[K2]	represent the primary environmental problems and its potential solutions.	
CO3[K3]	utilize the methods for the sustainable use of natural resources.	
CO4[K4]	organize an action plan for sustainable alternatives that integrate science,	
	humanist and social perspectives	
CO5[K4]	compare the structure and functions of ecosystems in the context of human-	
	environmental interactions.	

பகுதி - I -பொதுத்தமிழ			
Course Code: BDGT21		Course Title: அற	
		இலக்கியமும்தன்முன்னேற்றக் கட்டுரைகளும்	
On successful completion of the course, the learners should be able to			
CO1[K2]	அறஇலக்கியங்களில் இடம்பெற்றுள்ளஅறக்கருத்துக்களையும் வாழ்வியல்		
	முன்னேற்றச்சிந்தனைகளையும்எடுத்துரைப்பர்.		
CO2[K3]	சொல்லின்வகைகளையும்அதன்இலக்கணத்தையும்இப்பாடத்தோடுதொடர்புடைய		
	இலக்கியவரலாற்றையும்சான்றுகளுடன்விளக்குவர்.		
CO3[K4]	தனிமனித மற்றும் சமூக வாழ்வியலில் மக்கள்பின்பற்றவேண்டியஅறங்களை		
	அடையாளப்படுத்துவர்.		
CO4[K4]	 வாழும்போதேசரித்திரம்படைத்தவர்களின்சாதனைகளைவரிசைப்படுத்துவர்.		
CO5[K5]	வாழ்வில்முன்னேற்றம்பெறுவதற்கானவழிமுறைகளைமதிப்பிடுவர்.		

PART – I – HINDI LANGUAGE COURSE		
Course Code: BDGH21 Course Title: HINDI LANGUAGE		
	COURSE- II	
On successful completion of the course, the learners should be able to		
explain the significant contributions of the writers and the basics of grammar in		
writings.		
explain the renowned literary pieces, describe tourist spots and the methods to		
write letters.		
identify the techniques and writing style of writers.		
analyse the literary elements in the works of writers.		
O5[K5] appraise the works of writers.		
	PART – I – HINDI LA Course Code: BDGH21 On successful completion of the con explain the significant contributions writings. explain the renowned literary pieces write letters. identify the techniques and writing analyse the literary elements in the appraise the works of writers.	

PART – I – FRENCH LANGUAGE COURSE		
(Course Code: BDGF21	Course Title: FRENCH LANGUAGE
		COURSE- II
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic elements of grammar in French.	
CO2[K2]	explain the grammatical concept.	
CO3[K3]	use grammar in framing questions in French.	
CO4[K4]	analyse the importance of French in day to day life.	
CO5[K5]	assess the usage of French grammar in everyday life.	

PART II– ENGLISH		
Course Code: BDGE21		Course Title: ENGLISH FOR
		COMMUNICATION-II
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the content through the study of language and literature.	
CO2[K2]	comprehend and respond to passages, situations and texts.	
CO3[K3]	K3] apply appropriate vocabulary and construct ideas.	
CO4[K4]	analyze the prescribed literary pieces.	
CO5[K5]	develop grammatical structures accurately and appraise literature.	

Core Course		
Course Code: BDMT21		Course Title: THEORY OF EQUATIONS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamental concepts of theory of equations.	
CO2[K3]	solve equations by using relation between roots and coefficients.	
CO3[K3] apply computational techniques to find the solution of the equation.		
CO4[K4]	analyze the equation for its nature, position and roots.	
CO5[K5]	evaluate the roots of the cubic equation.	

Core Course		
	Course Code: BDMT22	Course Title: NUMERICAL METHODS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain basic concepts and its prope equations, difference operator, inter Solving Ordinary Differential Equa	erties of algebraic, transcendental, simultaneous polation, numerical differentiation /integration, tions
CO2[K3]	Apply iterative methods to determine approximate solution for any type of equation.	
CO3[K3]	compute numerical differentiation / find numerical solution of Ordinary various methods.	integration for any function /data and Differential Equations by applying
CO4[K4]	analyze data using numerical metho problem.	ods to obtain approximate solution for the given
CO5[K5]	evaluate missing data for real life p	roblems through interpolation.

Allied Course		
Course Code: BDPH2A1 Course Title: DIGITAL ELECTRO		Course Title: DIGITAL ELECTRONICS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic principles in digital systems.	
CO2[K2]	describe logic gates, karnaugh map, flip flops, and arithmetic circuits.	
CO3[K3]	apply digital logic principles to simplify simple circuits, convert number	
	system and codes.	
CO4[K4]	analyze circuits for various arithmetic and logic operations.	
CO5[K5]	the functioning of gates, combinational logic circuits, number systems	
	and flip flops.	

Allied Course		
Course Code: BDPH2AL		Course Title: FUNDAMENTAL PHYSICS
		LAB (FOR B.Sc MATHEMATICS AND
CHEMISTRY)		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the principle of the experiment	
CO2[K3]	construct electronic and electrical circuits	
CO3[K3]	determine the physical parameters by performing the experiments.	
CO4[K4]	analyze the physical parameters both manually and graphically	
CO5[K5]	evaluate the obtained results following the laboratory ethics	

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VALUE ADDED COURSE

(Course Code: BDVG21	Course Title: VALUE EDUCATION & GENDER STUDIES
On successful completion of the course, the learners should be able to		
CO1[K1]	recall the basic concepts of various	categories of value education and gender
	studies	
CO2[K2]	outline the principles of personal, family, professional and societal values	
CO3[K2]	explain strategies that can attain ethical-moral values, gender variations and gender	
	equality	
CO4[K4]	examine the multifaceted dimensions of women's role in the society with moral	
	values and ethics	
CO5[K4]	analyze the elements of gender stud	lies associated with values for peaceful and
	contented life	

ABILITY ENHANCEMENT COURSE - SKILL BASED		
Course Code: BDCL23 Course Title: INTRODUCTION TO COMPUTERS & MS OFFICE		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the components of computer and basics of office automation software	
CO2[K2]	summarize the features of windows operating system and PC software	
CO3[K2]	demonstrate the working of windows operating system	
CO4[K3]	utilize the word features for document creation	
CO5[K4]	analyze the commands for simple visual presentations	

	PAF Course Code: BDSA2	RT V Course Title: SOCIAL AWARENESS PROGRAMMES & PHYSICAL EDUCATION
On successful completion of the course, the learners should be able to		
CO1[K3]	identify their interest, leadership skills and undertake challenges.	
CO2[K3]	adapt to work in teamand communicate effectively with the society	
CO3[K3]	instill a sense of responsibility on environmental issues and conservation of nature	
CO4[K6]	develop the habit of creating awareness on health for society	
CO5[K6]	build up a positive image of women with self-confidence and self-awareness.	

பகுதிI - பொதுத்தமிழ்		
	Course Code: BDGT31 Course Title: சமய இலக்கியமும் நாடகமும்	
	On successful completion of the course, the learners should be able to	
CO1[K2]	சமய இலக்கியங்கள் மற்றும் நாடகங்கள் புலப்படுத்தும் கருத்துக்களையும்	
	செய்யுள் யாப்பு மரபுகளையும் எடுத்துரைப்பர்	
CO2[K3]	இறையடியார்கள் இறைவனைப் போற்றும் மரபினை அடையாளப்படுத்துவர்.	
CO3[K4]	அடியவர்கள் இறைவனை வேண்டும் மரபினையும் அவர்களது இலக்கியங்களில்	
	இடம்பெற்றுள்ள புராணக் கருத்துக்களையும் ஆய்ந்தறிவர்.	
CO4[K4]	சமய இலக்கியங்கள் உணர்த்தும் இறை மற்றும் தத்துவச் சிந்தனைகளை ஆராய்வர்.	
CO5[K5]	சமய இலக்கியங்கள் மற்றும் நாடகங்களின் பொருண்மைகளை மதிப்பிடுவர்.	

PART – I – HINDI LANGUAGE COURSE		
(Course Code: BDGH31	Course Title: HINDI LANGUAGE COURSE- III
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the significant contribution	s of the writers and poetics
CO2[K2]	explain the renowned literary pieces and describe factual reports for everyday life	
CO3[K3]	identify the techniques and writing style of writers	
CO4[K4]	analyse the literary elements in the works of writers	
CO5[K5]	appraise the works of writers	

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PART – I – FRENCH LANGUAGE COURSE				
Course Code: BDGF31		Course Title: FRENCH LANGUAGE COURSE- III;		
On successful completion of the course, the learners should be able to				
CO1[K2]	explain the basic elements of grammar in French.			
CO2[K2]	explain the grammatical concept,ex	press their feelings and opinions in French.		
CO3[K3]	CO3[K3] use grammar in framing correct sentences.			
CO4[K4]	analyse the importance of French in day to day life.			
CO5[K5]	[5] assess the usage of French grammar in everyday life.			

PART II- ENGLISH				
Course Code: BDGE31		Course Title: ENGLISH FOR ENRICHMENT - I		
On successful completion of the course, the learners should be able to				
CO1[K2]	explain the content through the stud	explain the content through the study of language and literature.		
CO2[K2]	comprehend and respond to passage	es, situations and texts.		
CO3[K3]	CO3[K3] apply appropriate vocabulary and construct ideas.			
CO4[K4]	analyze the prescribed literary piece	es.		
CO5[K5]	develop grammatical structures acc	urately and appraise literature.		

Core Course			
Course Code: BDMT31 Course Title: MECHANICS			
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the basic concepts & principles of statics and dynamics		
CO2[K3]	apply the geometrical arguments for	r proving the results in Mechanics.	
CO3[K3]	solve problems in Forces acting a	t a point, Moments, Friction, Projectiles	
	and Collision using the laws and theorems.		
CO4[K4]	analyze the mechanism of physical	problems.	
CO5[K5]	evaluate resultant of any number of	forces acting on a particle in real life	
	problems.		

Core Course				
Course Code: BDMT32		Course Title: DIFFERENTIAL EQUATIONS		
On successful completion of the course, the learners should be able to				
CO1[K2]	explain the basic concepts of ODE, PDE and Laplace transforms.			
CO2[K3]	apply the concepts of first order dif	ferential equation in solving real life problems.		
CO3[K3]	CO3[K3] solve the ODE and simultaneous linear differential equations by using Laplace transforms.			
CO4[K4]	examine the different forms of ODI	E and PDE for finding the solutions.		
CO5[K5]	evaluate problems of ODE and PDI	Ξ.		

Allied Course		
Course Code: BDMT3A		Course Title: PROGRAMMING IN C& C++
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamental concepts of C and C++.	
CO2[K3]	apply decision making, looping, branching statements, structure, union, constructor and destructor to create simple programs.	
CO3[K3]] identify various dimensional arrays, string handling and user defined functions.	
CO4[K4]	4[K4] analyze the concept of various types of operator overloading and inheritance.	
CO5[K5]	choose appropriate OOPs structure	for solving real life problems.

Allied Course				
Course Code: BDMT3AL		Course Title: PROGRAMMING IN C &		
		C++ LAB		
On successful completion of the course, the learners should be able to				
CO1[K2]	explain conditional, control making statements and OOPs for solving problems.			
CO2[K3]	CO2[K3] develop programming skills.			
CO3[K4] analyze the concepts of functions, structures, constructor and overloading.				
CO4[K5]	deduct and rectify errors in programs			
CO5[K6]	create programs for real life situation.			

	பகுதிI -	பொதுத்தமிழ்
	Course Code: BDGT41	Course Title: கவிதை இலக்கி சிறுகதையும்
On success	ful completion of the course, the le	earners should be able to
CO1[K2]	இலக்கியங்களின் உட்பொருளினை	எடுத்துரைப்பர்.
CO2[K3]		இலக்கணத்தையும்,கலைச்சொற்களின் பர்.
CO3[K3]	இலக்கியப் படைப்புகளில் பதிவாக	ியுள்ளசமூகச் சிந்தனைகளைக் கட்டன
CO4[K4]	இலக்கியங்கள் புலப்படுத்தும் மனி	தநேயக் கருத்துக்களைஆராய்வர்
CO5[K5]	இலக்கியப் படைப்புகளில் இடம்டெ	பறும் மாந்தர்களின் பண்புநலன்களைமதி
	Course Code: BDGH41	Course Title: HINDI LANGU
On success	ful completion of the course, the l	COURSE- IV earners should be able to
CO1[K2]	explain the significant contribution	as of the writers and the history of Hind
001[112]	Literature	
CO2[K2]	explain the renowned literary piec	es
CO3[K3]	identify the techniques and writir	ng style of writers and demonstrate the
	write on given topics	
CO4[K4]	analyse the literary elements in the	e works of writers
CO5[K5]	appraise the works of writers, prac	tice the art of translation
C05[R5]		
	PART – I – FRENCH	LANGUAGE COURSE
	PART – I – FRENCH Course Code: BDGF41	LANGUAGE COURSE Course Title: FRENCH LANGUA COURSE- IV
On success	PART – I – FRENCH Course Code: BDGF41 ful completion of the course, the le	LANGUAGE COURSE Course Title: FRENCH LANGUA COURSE- IV earners should be able to
On success CO1[K2]	PART – I – FRENCH Course Code: BDGF41 ful completion of the course, the le explain the basic elements of gram	LANGUAGE COURSE Course Title: FRENCH LANGUA COURSE- IV earners should be able to mar in French .
On success CO1[K2] CO2[K2]	PART – I – FRENCH Course Code: BDGF41 ful completion of the course, the le explain the basic elements of gram explain the grammatical concept, o	LANGUAGE COURSE Course Title: FRENCH LANGUA COURSE- IV earners should be able to mar in French . express their feelings and opinions in Fr
On success CO1[K2] CO2[K2] CO3[K3]	PART – I – FRENCH Course Code: BDGF41 ful completion of the course, the le explain the basic elements of gram explain the grammatical concept, of use grammar in framing correct se	LANGUAGE COURSE Course Title: FRENCH LANGUA COURSE- IV earners should be able to mar in French . express their feelings and opinions in F ntences.
On success CO1[K2] CO2[K2] CO3[K3] CO4[K4]	PART – I – FRENCH Course Code: BDGF41 ful completion of the course, the le explain the basic elements of gran explain the grammatical concept, of use grammar in framing correct se analyse the importance of French	LANGUAGE COURSE Course Title: FRENCH LANGUA COURSE- IV earners should be able to mar in French . express their feelings and opinions in French . in day to day life.

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PART – I – HINDI LANGUAGE COURSE			
(Course Code: BDGH41	Course Title: HINDI LANGUAGE	
		COURSE- IV	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the significant contributions of the writers and the history of Hindi		
	Literature		
CO2[K2]	explain the renowned literary piece	S	
CO3[K3]	identify the techniques and writing	g style of writers and demonstrate the ability to	
	write on given topics		
CO4[K4]	analyse the literary elements in the	works of writers	
CO5[K5]	appraise the works of writers, pract	ice the art of translation	

PART – I – FRENCH LANGUAGE COURSE				
Course Code: BDGF41		Course Title: FRENCH LANGUAGE COURSE- IV		
On successful completion of the course, the learners should be able to				
CO1[K2]	explain the basic elements of grammar in French.			
CO2[K2]	explain the grammatical concept, express their feelings and opinions in French.			
CO3[K3] use grammar in framing correct sentences.				
CO4[K4]	analyse the importance of French ir	n day to day life.		
CO5[K5]	assess the usage of French gramma	r in everyday life.		

	PART II–	ENGLISH	
	Course Code: BDGE41	Course Title: ENGLISH FOR ENRICHMENT - II	
On success	ful completion of the course, the le	arners should be able to	
CO1[K2]	explain the content through the stud	dy of language and literature.	
CO2[K2]	comprehend and respond to passages, situations and texts.		
CO3[K3]	apply appropriate vocabulary and construct ideas.		
CO4[K4]	analyze the prescribed literary piec	es.	
	develop grammatical structures accurately and appraise literature.		
CO5[K5]	develop grammatical structures acc	urately and appraise literature.	
CO5[K5]	develop grammatical structures acc	Course	
CO5[K5]	develop grammatical structures acc Core Course Code: BDMT41	Course Course Title: GRAPH THEORY	
CO5[K5] On success	develop grammatical structures acc Core Course Code: BDMT41 ful completion of the course, the le	Course Course Title: GRAPH THEORY arners should be able to	
CO5[K5] On success CO1[K2]	develop grammatical structures acc Core of Core of <td co<="" td=""><td>Course Course Course Title: GRAPH THEORY arners should be able to theory.</td></td>	<td>Course Course Course Title: GRAPH THEORY arners should be able to theory.</td>	Course Course Course Title: GRAPH THEORY arners should be able to theory.
CO5[K5] On success CO1[K2] CO2[K3]	develop grammatical structures acc Core (Course Course Course Title: GRAPH THEORY arners should be able to theory. ithm for proving characterization, equiva	
CO5[K5] On success CO1[K2] CO2[K3] CO3[K3]	Core of Course Code: BDMT41 ful completion of the course, the le explain the basic concepts of graph apply logical argument / algorized conditions in graph theory. solve the real life problems using graph	Course Course Course Title: GRAPH THEORY arners should be able to theory. ithm for proving characterization, equivaraph theoretical structures.	
CO5[K5] On success CO1[K2] CO2[K3] CO3[K3] CO4[K4]	Core of Course Code: BDMT41 ful completion of the course, the le explain the basic concepts of graph apply logical argument / algor conditions in graph theory. solve the real life problems using g analyze the properties of vertex and	Course Course Course Title: GRAPH THEORY arners should be able to theory. ithm for proving characterization, equiv raph theoretical structures. l edge colouring in graphs.	

Core Course			
Course Code: BDMT42		Course Title: SEQUENCES AND SERIES	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the basic concepts of sequences and series.		
CO2[K3]	develop the properties of convergen	t, divergent and oscillating sequences.	
CO3[K3]	apply logical argument for proving characterization, equivalence criterions on various concepts of sequences and series.		
CO4[K4]	analyze the behavior of series through various tests.		
CO5[K5]	justify the nature of sequences.		

Allied Course				
Course Code: BDMT4ACourse Title: PROGRAMMING IN PYTHON				
On successful completion of the course, the learners should be able to				
CO1[K2]	explain the principles of Python.			
CO2[K2]	Describe data types, operators, fund	ctions, tuples, dictionaries and files		
CO3[K3]	CO3[K3] use loops, functions and data types to write simple programs.			
CO4[K3]	write Python program using OOPs			
CO5[K4]	analyze the process of structuring the	he data using Lists, Tuples and Dictionaries		

Allied Course		
Course Code: BDMT4ALCourse Title: PROGRAMMING IN PYTHON LAB		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the structures and syntax of Python.	
CO2[K3]	write programs using data types, tuples and dictionaries.	
CO3[K4]	distinguish C and C++ with Python	
CO4[K5]	deduct and rectify the errors in programs.	
CO5[K6]	develop their programming skills.	

		Course	
	Course Code: BDMT4A	Course Title: PROGRAMMING IN PYTHON	
success	ful completion of the course, the le	earners should be able to	
CO1[K2]	explain the principles of Python.		
CO2[K2]	Describe data types, operators, fun	ctions, tuples, dictionaries and files	
CO3[K3]	use loops, functions and data types	s to write simple programs.	
CO4[K3]	write Python program using OOPs	5.	
:O5[K4]	analyze the process of structuring t	the data using Lists, Tuples and Dictionaries	
	Allied	Course	
Course Code: BDMT4AL Course Title: PROGRAMMING IN PYTHON LAB			
n success	ful completion of the course, the le	earners should be able to	
CO1[K2]	explain the structures and syntax of Python.		
CO2[K3]	write programs using data types, tu	ples and dictionaries.	
CO3[K4]	distinguish C and C++ with Pythor	1	
CO4[K5]	deduct and rectify the errors in pro	grams.	
C	Discipline Sj ourse Code: BDMT4DSL	pecific Course Course Title: MATHEMATICA& MAPLI	
		LAB	
n success	ful completion of the course, the le	earners should be able to	
CO1[K2]	explain the technical codings for e software.	efficient usage of Mathematical and Maple	
CO2[K3]	apply the suitable syntax and sem	antics to solve real life problems.	
CO3[K3]	develop programming skills.		
O_{1}	analyse the concepts of algebra, g	analyse the concepts of algebra, graph theory and differential equations	
04[K4]	evaluate problems on integrals.		

Core Course		
Course Code: GLMT51Course Title: REAL ANALYSIS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain countability, basic concepts and the properties of metric spaces.	
CO2[K3]	make use of continuous functions to prove results in context of real line.	
CO3[K3]	identify the behaviour of complete metric space.	
CO4[K4]	analyze the characteristics and equivalent criterions of various concepts of R.	
CO5[K5]	prove theorems, results and corollar	ies on real line.

Core Course		
Course Code: BDMT52 Course Title: MODERN ALGEBRA		Course Title: MODERN ALGEBRA
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts in Groups and Rings.	
CO2[K3]	apply the logical arguments for proving the characterizations/equivalent conditions of algebraic structure.	
CO3[K3]	solve problems using the results of Groups and Rings	
CO4[K4]	analyze the nature and properties of Rings and Ideals.	
CO5[K5]	justify the statements in Groups / R	ings.

Core Course		
Course Code: BDMT5L Course Title: MATLAB		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the codings of MATLAB.	
CO2[K3]	find regression lines for any bivariate data.	
CO3[K3]	apply MATLAB tools for solving Mathematical problems and drawing graphs.	
CO4[K4]	analyze various differential equations and find the solution.	
CO5[K5]	evaluate the optimal solution of LPP and value of integral.	

Elective Course		
Course Code: BDMT5E1 Course Title: LINEAR PROGRAMMING		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain LPP, canonical & standard classes of LPP.	form, primal-dual form and sub / special
CO2[K3]	apply efficient computational techniques and algorithms that are needed to solve optimization problems.	
CO3[K3]	solve the balanced / unbalanced problems in sub/special classes of LPP	
CO4[K4]	examine feasible, infeasible, IBFS, unbounded, degenerate/non degenerate solutions to a LPP, TP and AP.	
CO5[K5]	construct mathematical formulation for real life problems.	

Elective Course		
Course Code: BDMT5E2Course Title: FOURIER ANALYSIS		Course Title: FOURIER ANALYSIS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the expansion of periodic functions.	
CO2[K3]	apply mathematical skills to construct Fourier series for any function.	
CO3[K3]	develop the finite Fourier sine cosine transform	
CO4[K4]	analyze the applications of Fourier integrals formula.	
CO5[K6]	construct Fourier sine and cosine transform.	

Elective Course		
Course Code: BDMT5E3		Course Title: DISCRETE MATHEMATICS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic principles of discrete Mathematical structures.	
CO2[K3]	write the truth table for any logical statement.	
CO3[K3]	identify the normal forms and quantifiers.	
CO4[K4]	analyze the concept of Boolean algebra in switching circuits.	
CO5[K5]	evaluate the types of Grammars and generate them for Languages.	

	Elective Course		
Course Code: BDMT5E4 Course Title: MODERN APPLIED ALGEBRA		Course Title: MODERN APPLIED ALGEBRA	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain algebraic systems, Boolean algebra and lattice		
CO2[K3]	apply algebraic structures to data communication.		
CO3[K3]	solve problems in modular and geometric lattices.		
CO4[K4]	analyze the concepts of coding and decoding digital informations.		
CO5[K5]	evaluate problems on applied algeb	ra.	

Course Code: BDMT5V		Course Title: INTERNSHIP/ON-THEJOB
		IKAINING
On successful completion of the course, the learners should be able to		
CO1[K2]	relate the class room theory with work place practice.	
CO2[K3]	apply the practices / procedures observed in real time working environment.	
CO3[K4]	analyse the workflow and communication flow prevailing in the	
	institution/industry.	
CO4[K5]	assess interests and abilities in their field of study.	
CO5[K6]	propose strategies, policies and gu	idelines for enhancing efficiency of
	industrial/institutional operations.	

SKILL BASED COURSES		
Course Code: BDCG51 Course Title: CAREER GUIDANCE		
On successful completion of the course, the learners should be able to		
CO1[K1]	recall the basic concepts about history, culture of India and languages.	
CO2[K2]	summarize the various events related to Indian economy and Indian national	
CO3[K3]	explain the multi - dimensional aspects of science	
COJ[KJ]		
CO4[K4]	apply the mathematical knowledge to solve different problems.	
CO5[K5]	analyze the problems related to mer	ntal ability and reasoning power.

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Core Course		
Course Code: BDMT61 Course Title: COMPLEX ANALYSIS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamental concepts of complex numbers.	
CO2[K3]	solve problems in context of complex numbers system.	
CO3[K3]	identify the behaviour of conformal mapping and transformations.	
CO4[K4]	analyze the characteristics and equivalence criterions of various concepts of	
	complex numbers.	
CO5[K5]	prove theorems, corollaries and resu	alts of complex numbers.

Core Course		
Course Code: BDMT62Course Title: LINEAR ALGEBRA		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamental concepts of linear space and theory of matrix.	
CO2[K3]	develop the properties of inner Product Spaces and bilinear forms.	
CO3[K3]	Solve problems in linear algebra and compute eigen values and eigen vectors.	
CO4[K4]	analyze the characteristics and equivalence criterions of linear space and matrix theory.	
CO5[K5]	prove theorems, results and corollaries on linear algebra.	

Core Course		
Course Code: BDMT63Course Title: STATISTICS		Course Title: STATISTICS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain various concepts and properties of random variables, sampling techniques and various distributions.	
CO2[K3]	apply t, F and χ^2 test to test significance of sampling.	
CO3[K3]	solve numerous problems for any statistical data.	
CO4[K4]	distinguish different types of distrib significance.	utions, random variables, and various tests of
CO5[K5]	evaluate the significance difference	through ANOVA.

Core Course		
Course Code: BDMT6LCourse Title: R LANGUAGE LAB		Course Title: R LANGUAGE LAB
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of R language.	
CO2[K3]	apply t-Test and F-Test for testing of samples.	
CO3[K4]	analyze different measures of central tendencies.	
CO4[K5]	evaluate correlation coefficient for any bivariate data.	
CO5[K6]	develop the programming skill to so	olve real life problems.

Elective Course			
С	Course Code: BDMT6E1 Course Title: OPERATIONS RESEARCH		
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the basic concepts of decisi	ion making and optimization problem.	
CO2[K3]	write various types of queueing models		
CO3[K3]	apply quantitative technique to solve optimization problems.		
CO4[K4]	examine problems on queueing theory and inventory control.		
CO5[K5]	evaluate problems on sequencing an	nd replacement of machines to make effective	

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Elective Course		
Course Code: BDMT6E2 Course Title: AUTOMATA AND FORM LANGUAGES		Course Title: AUTOMATA AND FORMAL LANGUAGES
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic knowledge in automation and phrase structure grammars.	
CO2[K3]	construct derivation trees.	
CO3[K3]	apply the concepts in theoretical computer science.	
CO4[K4]	analyze regular languages.	
CO5[K5]	evaluate problems on automata and formal languages.	

Allied Course			
Course Code: BDMT3A1Course Title: ALLIED MATHEMATICS I			
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the fundamentals of ODE, PDE, Laplacetransforms.		
CO2[K3]	solve problems of ODE by using Laplace transforms.		
CO3[K3]	identify the methods for solving PDE.		
CO4[K4]	examine the different forms of ODE for finding the solutions.		
CO5[K5]	estimate the solution forscientific p	roblems through differential equations.	

Allied Course		
Course Code: BDMT4A1 Course Title: ALLIED MATHEMATICS I		Course Title: ALLIED MATHEMATICS II
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts in vector	calculus and algebraic structure.
CO2[K2]	discuss properties of vector valued	functions.
CO3[K3]	solve the line and surface integrals.	
CO4[K4]	examine Green's, Gauss's and Stoke's theorem for vector valued functions.	
CO5[K4]	the characterization and equivalenc	e criterion of group structures.

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Non-Major Elective Course		
Course Code: BDMT4N Course Title: STATISTICAL METHODS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of statist	ical constants, correlation and regression.
CO2[K2]	relate bivariate data	
CO3[K3]	solve problems in central tendency.	
CO4[K3]	compute various measures of dispersion.	
CO5[K4]	analyze statistical techniques to solv	ve problems.

Non-Major Elective Course		
Course Code: BDMT5N Course Title: NUMERICAL METHODS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain algebraic, transcendental equations and finite difference operators.	
CO2[K2]	estimate the roots of the equation using various methods.	
CO3[K3]	solve problems using computational skills.	
CO4[K3]	O4[K3] apply various methods to solve simultaneous equation.	
CO5[K4]	analyze various finite difference op	erators.

Job oriented Course		
Course Code: BDJO66 Course Title: CAREER MATHEMATICS		
On successful completion of the course, the learners should be able to		
CO1[K2]	discuss basic formulae in Mathema	tics.
CO2[K2]	explain various verbal and non-verbal reasoning problems.	
CO3[K3]	solve arithmetic problems	
CO4[K3]	build their confidence level for attending competitive examinations.	
CO5[K4]	analyze analytical, logical problems	3.

Job oriented Course		
Course Code: BDJO66L Course Title: CAREER MATHEMATICS LAB		
On successful completion of the course, the learners should be able to		
CO1[K2]	discuss basic formulae in Mathematics.	
CO2[K2]	explain various verbal and non-verbal reasoning problems.	
CO3[K3]	solve arithmetic problems.	
CO4[K3]	build their confidence level for attending competitive examinations.	
CO5[K4]	Analyze analytical, logical problem	S.

	Extra cred	lit Course	
Course Code: BDMTEC1 Course Title: MATHEMATICS FOR CAREER BUILDING			
On success	ful completion of the course, the lea	arners should be able to	
CO1[K2]	explain basic formulae, geometric properties and results in various concepts of mathematics.		
CO2[K2]	select suitable formulae and method to solve problems.		
CO3[K3]	use general intelligence and aptitude skills to face all competitive examinations confidently.		
CO4[K3]	solve problems effectively through	appropriate method.	
CO5[K4]	focus on improving the communicational and computational kills.		



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THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS), SIVAKASI – 626 123.

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC, College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH)

DEPARTMENT OF MATHEMATICS

PG DEGREE PROGRAMME IN MATHEMATICS

SYLLABUS 2020

PROGRAMME EDUCATIONAL OBJECTIVES		
The Graduate	es will	
PEO1.	have the caliber to work in various colleges, universities and shine in higher level	
12011	administrations like UPSC, TNPSC, IBPS, etc.,	
PEO2.	have the ability to pursue Research in any branch of Mathematics, complying to	
1202	ethical values.	
PEO3	develop entrepreneurial skills, to be empowered according to the professional	
1200.	requirement and become self-dependent.	

PROGRAMME SPECIFIC OUTCOMES

By the Completion of M.Sc MATHEMATICS programme, the learners will be able to

PSO1.	formulate and develop mathematical arguments in a logical manner.
PSO2.	tackle complex problems, reveal structures, clarify problems, discover suitable analytic / numerical methods and interpret solutions.
PSO3.	empowered to take up academic research.
PSO4.	communicate the recent trends of Mathematics in various fields effectively.
PSO5.	work as a team member having skills for effective collaboration to ad hoc diverse purposes.
PSO6.	communicate professionally and face challenges ethically in the society.
PSO7.	recognize the need for the ability to engage in independent and life-long learning in the broadest context of emerging trends in Mathematics.

COURSE OUTCOME

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Core Course			
(Course Code: MDMT11 Course Title: ALGEBRA I		
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the basic concepts and the properties of Group and Ring theory.		
CO2[K3]	apply logical proof for algebraic structures		
CO3[K3]	[K3] identify the algebraic structures in solvable group.		
CO4[K4]	analyze the characteristics and equivalence criterions of various concepts of		
	algebraic structures.		
CO5[K5]	prove various theorems, results and	corollaries of Group and Ring theory.	

Core Course			
Course Code: MDMT12 Course Title: REAL ANALYSIS I		Course Title: REAL ANALYSIS I	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the topological properties, c	convergent, continuity and differentiability of	
	functions defined on subsets of R.		
CO2[K3]	identify the properties of metric	space, sequences, series, continuity, uniform	
	continuity and differentiation in real line.		
CO3[K3]	determine the behaviour of sequence	es and series.	
CO4[K4]	analyze the characteristics and eq	uivalence criterions of various concepts in the	
	context of extended real number sys	stem	
CO5[K5]	prove various theorems, results and	corollaries of real number system.	

Core Course		
(Course Code: MDMT13	Course Title: OPERATIONS RESEARCH
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of netwo	rk, algorithms of network models and classical
	optimization theory.	
CO2[K3]	apply various network optimization algorithms to find solution for real situations.	
CO3[K3]	solve constrained and unconstrained problems through optimization techniques.	
CO4[K4]	analyze network problems, constrained and non constrained problems for optimum	
	solution.	
CO5[K5]	estimate time schedule, shortest du	ation and floating time for the project network.

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Core Course			
Course Code: MDMT14 EQUATIONS		Course Title: DIFFERENTIAL EQUATIONS	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the fundamental concepts of linear and non linear differential equations.		
CO2[K3]	make use of computational techniques to solve linear and nonlinear differential		
equations.			
CO3[K3] solve Legender, Euler and Bessel equations.			
CO4[K4]	examine the differential equations f	for the existence of solutions.	
CO5[K5]	evaluate PDE through various meth	ods.	

Core Course			
(Course Code: MDMT1L	Course Title: OPERATIONS RESEARCH	
On successful completion of the course, the learners should be able to			
CO1[K2]	illustrate the basic concepts of network theory and non linear programming.		
CO2[K3]	solve non-linear programming/network problems using TORA and EXCEL spread sheet.		
CO3[K3]	apply algorithms to find shortest path and minimal spanning tree.		
CO4[K4]	analyze time schedule by PERT and CPM.		
CO5[K6]	improve computational skills in sol	ving various discipline problems.	

Core Elective Course			
C	Course Code: MDMT1E1 Course Title: MATHEMATICAL MODELLING		
	On successful completion of the co	urse, the learners should be able to	
CO1[K2]	explain the basic concepts of mathe	matical models.	
CO2[K3]	2[K3] apply differential equation models to solve scientific problems.		
CO3[K3]	CO3[K3] construct mathematical models for solving real life problems.		
CO4[K4]	classify models through various mathematical concepts.		
CO5[K5]	evaluate the problems in various dis	sciplines.	

Core Elective Course			
Course Code: MDMT1E2 Course Title: MA7		Course Title: COMBINATORIAL MATHEMATICS	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the fundamental concepts on Inclusion and Exclusion principles		
CO2[K3]	identify contact networks and analysis of an activity network.		
CO3[K3]	3[K3] apply the concept of Permutations and Combinations in real life problem.		
CO4[K4]	examine the concepts of Polya's counting and Generating functions.		
CO5[K5]	evaluate problems in Binomial coef	ficients and Generating Permutations.	

Course Code: MDMT1E2 Course Title: COMBINATORI/ MATHEMATICS On successful completion of the course, the learners should be able to CO1[K2] explain the fundamental concepts on Inclusion and Exclusion principles CO2[K3] identify contact networks and analysis of an activity network. CO3[K3] apply the concept of Permutations and Combinations in real life problem. CO4[K4] examine the concepts of Polya's counting and Generating functions. CO5[K5] evaluate problems in Binomial coefficients and Generating Permutations. CO5[K5] evaluate problems of the course, the learners should be able to CO1[K2] On successful completion of the course, the learners should be able to CO1[K2] explain the fundamental concepts in Algebra of Linear Transformations CO2[K3] apply the properties of Linear Transformation in theory of matrices. CO3[K3] identify the behaviour of trace, transpose and determinants. CO4[K4] analyze the characteristics and equivalence criterions of various transformation CO5[K5] prove various theorems, results and corollaries of transformations. CO5[K5] on successful completion of the course, the learners should be able to CO1[K2] explain the basic concepts of Riemann Stieltjes integral, various functions, Lebesqu		Core Elect	tive Course	
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Core Course			
Course Code: MDMT22 Course Title: REAL ANALYSIS I		Course Title: REAL ANALYSIS II	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the basic concepts of Riema	ann Stieltjes integral, various functions,	
	Lebesque Measurable sets and func	tions	
CO2[K3]	apply the logical arguments to prove the properties of measure theory.		
CO3[K3]	identify the behaviour of sequences and series of function.		
CO4[K4]	analyze the characteristics and equivalence criterions of various concepts of R.		
CO5[K5]	prove various theorems, results and	corollaries in R.	

Core Course		
Course Code: MDMT23 Course Title: TOPOLOGY		Course Title: TOPOLOGY
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamental concepts o	f topological spaces.
CO2[K3]	identify various forms of topology	
CO3[K4]	classify the topological spaces by countability and separation axioms.	
CO4[K4]	examine the properties of topological spaces.	
CO5[K5]	prove theorems on product, metric, connected and compact spaces.	

Core Course		
Course Code: MDMT24 Course Title: ADVANCED GRAPH THEORY		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the concepts of graph theory.	
CO2[K3]	apply graph theoretical knowledge to solve real life problems.	
CO3[K3]	determine the Chromatic number of the graph.	
CO4[K4]	analyse the properties of various graphs.	
CO5[K5]	prove the theorems on numerous concepts of Graph theory.	

Core Course		
Course Code: MDMT31 Course Title: ALGEBRA III		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of theory of fields and extension fields.	
CO2[K3]	apply mathematical / logical argument for proving criterions and	
	characterizations of field theory and Galois Theory.	
CO3[K3]	construct splitting field and Galois group over rationals.	
CO4[K4]	examine the nature of finite fields.	
CO5[K5]	prove theorems related to G (K, F), field of rational functions solvability by	
	radicals of a polynomial.	

	Core Course		
Course Code: MDMT32 Course Title: ADVANCED NUMERICAL METHODS			
On successful completion of the course, the learners should be able to			
CO1[K2]	explain various methods for solving symmetric matrices, interpolation, and		
	differential equations.		
CO2[K3]	find the exact solution for the ordinary differential equation, polynomial,		
	trigonometric, and exponential functions.		
CO3[K3]	identify the method for solving interpolation, and extrapolation.		
CO4[K4]	classify the methods for solving the partial differential equation of second order.		
CO5[K5]	justify the solution of various differential equations.		
CO5[K5]	justify the solution of various differential equations.		

Core Course		
Course Code: MDMT33 Course Title: FUNCTIONAL ANALYSI		Course Title: FUNCTIONAL ANALYSIS I
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of functional analysis and the properties of Normed,	
	Banach & Dual spaces.	
CO2[K3]	identify the characteristics of spectrum of a bounded linear operator.	
CO3[K3]	apply the equivalence criterions on various concepts of functional analysis.	
CO4[K4]	analyze the duals of L ^p ([a, b]) and C([a, b]).	
CO5[K5]	prove/disprove theorems and results on functional analysis.	

Core Course		
Course Code: MDMT34 Course Title: INTEGRAL EQUATIONS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamental concepts of Integral Equations	
CO2[K3]	estimate the solution of Fredholm and Volterra Integral Equations using computational techniques.	
CO3[K3]	apply various methods to find solution of Fredholm and Volterra, Integro–Differential Equations.	
CO4[K4]	connect the relation between Integr Integro–Differential Equations.	al and Differential Equations & Integral and
CO5[K5]	evaluate problems in Integral equat	ions.

Core Course		
Course Code: MDMT3L Course Title: ADVANCED NUMERICAL METHODS LAB		
	<u> </u>	
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts in C and	C++ program.
CO2[K3]	apply C language to solve the cubic equation.	
CO3[K3] make use of Euler's method to find the numerical solution of differential equation.		
CO4[K4]	examine the solution of differential equation by Runge–Kutta method.	
CO5[K6]	develop C ++ program for the second order differential equations.	

Core Elective Course		
Course Code: MDMT3E1 Course Title: NUMBER THEORY & RESEARCH ETHICS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain research ethics and the several basic results on Number Theory.	
CO2[K3]	apply effective computational techniques / mathematical arguments for proving characterization, criterions on number theoretical concepts.	
CO3[K3]	solve various types of problems in context of theory of numbers.	
CO4[K4]	analyze mathematical ethics involved in various disciplines.	
CO5[K5]	prove the properties of congruences and primitive roots.	

Core Elective Course		
Course Code: MDMT3E2 Course Title: ADVANCED ANALYSIS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of linear transformation and Differentiation.	
CO2[K3]	apply differentiation and integration for functions of several variables.	
CO3[K3]	make use of mathematical arguments for proving characteristics/criterions of	
	real number system.	
CO4[K4]	analyze the closed forms and exact	forms.
CO5[K5]	prove/disprove theorems in Euclidean n-dimensional space (R ⁿ).	

Core Course			
Course Code: MDMT41 Course Title: FUZZY ALGEBRA			
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the basic concepts of fuzzy algebra.		
CO2[K3]	determine fuzzy arithmetic operations and relations.		
CO3[K3]	[K3] solve problems in fuzzy numbers, relations and projections.		
CO4[K4]	analyze the characteristics of fuzzy set in algebraic structures.		
CO5[K5]	prove the properties and characterizations of fuzzy algebra.		

Core Course		
Course Code: MDMT42 Course Title: COMPLEX ANALYSIS		Course Title: COMPLEX ANALYSIS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of complex numbers & properties of analytic functions.	
CO2[K3]	apply mathematical / logical arguments for proving characterizations, criterions	
	of complex number system.	
CO3[K3]	compute poles and residues of functions, line integrals and finite integrals.	
CO4[K4]	examine the properties of meromorphic and entire functions.	
CO5[K5]	prove theorems and results in context of complex number system.	

Core Course		
Course Code: MDMT43 Course Title: MATHEMATICAL STATISTICS		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamentals and properties of probability, random variable,	
	expectations, and distribution functions.	
CO2[K3]	solve various problems in special distributions.	
CO3[K3]	CO3[K3] apply computational techniques for solving problems in multivariate distributions.	
CO4[K4]	analyze the behavior of limiting distributions and transformation of variables.	
CO5[K5]	prove theorems and results on sampling theory.	

C	Course Code: MDMT4E1	Course Title: FUNCTIONAL ANALYSIS
	On successful completion of the co	ourse, the learners should be able to
CO1[K2]	explain the operators on Normed(Linear), Hilbert spaces and the properties of compact linear maps & bounded operators.	
CO2[K3]	make use of the concept of inner pr properties.	oduct space for proving various results and
CO3[K3]	apply logical argument for proving Hilbert spaces.	the characterizations/criterions of Normed and
CO4[K4]	analyze spectrum of bounded and c	ompact operators on Linear and Hilbert space
CO5[K5]	prove / disprove theorems and result	ts in context of functional analysis.
	Core Elect	ive Course
C	Course Code: MDMT4E2	Course Title: ADVANCED TOPOLOGY
	On successful completion of the co	burse, the learners should be able to
CO1[K2]	explain the fundamental concepts o	f topological spaces.
CO2[K3]	construct the mathematical arguments that relate to the study of topological spaces.	
CO3[K4]	analyze the equivalence criterions of	of various concepts of topological spaces.
CO4[K5]	deduct the properties of topological	spaces.
CO5[K5]	prove theorems on connected, com	pact spaces.
	Core (Course
	Course Code: MDMT4P	Course Title: -PROJECT AND VIVA VOCE
	On successful completion of the co	ourse, the learners should be able to
CO1[K2]	illustrate the mathematical concepts	s in the area of specialization.
CO2[K3]	develop analytic and research skills	
CO3[K4]	analyze and extend any research paper in various branches of Mathematics.	
CO4[K5]	choose the area of interest for pursuing research	
CO5[K6]	create new ideas in emerging trends of Mathematics.	
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Core Elective Course		
Course Code: MDMT4E1 Course Title: FUNCTIONAL ANALYSIS II		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the operators on Normed(Linear), Hilbert spaces and the properties of	
	compact linear maps & bounded operators.	
CO2[K3]	make use of the concept of inner product space for proving various results and	
	properties.	
CO3[K3]	apply logical argument for proving the characterizations/criterions of Normed and	
	Hilbert spaces.	
CO4[K4]	analyze spectrum of bounded and c	ompact operators on Linear and Hilbert spaces.
CO5[K5]	prove / disprove theorems and results in context of functional analysis.	

Course Code: MDMT4E2 Course Title: ADVANCED TOPOLOGY		
On successful completion of the course, the learners should be able to		
explain the fundamental concepts of topological spaces.		
construct the mathematical arguments that relate to the study of topological		
analyze the equivalence criterions of various concepts of topological spaces.		
deduct the properties of topological spaces.		
prove theorems on connected, compact spaces.		

Core Course		
Course Code: MDMT4P Course Title: -PROJECT AND VIVA VOCE		
On successful completion of the course, the learners should be able to		
CO1[K2]	illustrate the mathematical concepts in the area of specialization.	
CO2[K3]	2[K3] develop analytic and research skills.	
CO3[K4] analyze and extend any research paper in various branches of Mathematics.		
CO4[K5]	choose the area of interest for pursuing research	
CO5[K6]	create new ideas in emerging trends of Mathematics.	

Non-Major Elective Course		
Course Code: MDMT2E Course Title: OPTIMIZATION TECHNIQUES		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamentals of optimization and decision-making problems.	
CO2[K3]	[3] apply algorithm to obtain optimum solution for LPP, transportation and assignment problems.	
CO3[K3]	CO3[K3] compute solution for game theory and network problems.	
CO4[K4]	analyze network and game theory problems for optimum solution.	
CO5[K5]	5] estimate the solution for the real-life problems.	

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THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS), SIVAKASI – 626 123.

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC, College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH)

DEPARTMENT OF MATHEMATICS

UG DEGREE PROGRAMME IN MATHEMATICS WITH COMPUTER APPLICATIONS

PROGRAMME EDUCATIONAL OBJECTIVES

The Graduates will		
PEO1.	be excellent in teaching, programming skills and subject knowledge, take them to grow in education system and higher administrations like TNPSC, IPSC, LIC etc.,	
PEO2.	construct mathematical models for real life problems and obtain solution by analytic approach and perform social, professional, ethical responsibilities.	
PEO3.	explore critical thinking, programming skills in diverse areas of Mathematics and experience an environment conducive in cultivating skills for successful career entrepreneurship and higher studies.	

PROGRAMME SPECIFIC OUTCOMES

By the Completion of B.Sc Mathematics with Computer Applicatioins programme, the learners

will be able to

PSO1.	apply the knowledge in pure, applied Mathematics and programming languages to solve mathematical problems.	
PSO2.	provide optimistic solutions to social life problems by applying various Mathematical methods.	
PSO3.	become indepth, motivated researchers in a specific area of study with the ability to recognize and address important scientific problems.	
PSO4.	communicate effectively about the different concepts of Mathematics in various disciplines.	
PSO5.	collaborate effectively in a team to solve social and real life problems.	
PSO6.	apply ethical principles and be committed to professional ethics & social responsibilities.	
PSO7.	apply the mathematical concepts in all the fields of learning including research and recognize the need and prepare for life-long learning.	

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COURSE OUTCOME

பகுதி – I - பொதுத்தமிழ		
Course Code: BDGT11		Course Title: சங்க இலக்கியமும் உரைநடையும்
இப்பாடத்தை முழுமையாகக் கற்றபின் மாணவியர் பெறும் திறன்கள்:		
CO1[K2]	எழுத்திலக்கணம், சங்க இலக்கிய	ப்பாடல் மற்றும் கட்டுரைகளின் உட்பொருளை
	எடுத்துரைப்பர்.	
CO2[K3]	சங்கஇலக்கியப்பாடல் மற்றும் கட்	டுரைகள் பதிவுசெய்துள்ள அகவாழ்வியலைச்
	சான்றுகளுடன் விளக்குவர்.	
CO3[K4]	சங்கஇலக்கியப்பாடல் மற்றும் கட்	டுரைகள் பதிவுசெய்துள்ள புறவாழ்வியலை
	வரிசைப்படுத்துவர்.	
CO4[K4]	எழுத்திலக்கண விதிகள் மற்றும் ।	படைப்பாளர்களின் கருத்துப்புலப்பாட்டுத்திறனை
	ஆய்ந்துரைப்பர்.	
CO5[K5]	மக்களின் சமுதாயநிலையை இல	க்கியக்கட்டுரைகளின் வழி மதிப்பிடுவர்.

PART – I – HINDI LANGUAGE COURSE		
Course Code: BDGH11		Course Title: HINDI LANGUAGE COURSE - I
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the significant contributions of the writers and the basics of grammar in writings	
CO2[K2]	explain the renowned literary pieces	
CO3[K3]	identify the techniques and writing style of writers	
CO4[K4]	analyse the literary elements in the works of writers, expand proverbs	
CO5[K5]	appraise the works of writers	

PART – I – FRENCH LANGUAGE COURSE		
Course Code: BDGF11		Course Title: FRENCH LANGUAGE COURSE- I
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic elements of grammar in French and tell time in French.	
CO2[K2]	explain the grammatical concept.	
CO3[K3]	use grammar in framing questions in French.	
CO4[K4]	analyse the importance of French in day to day life.	
CO5[K5]	assess the usage of French grammar in a workplace.	

PART II– ENGLISH		
Course Code: BDGE11		Course Title: ENGLISH FOR COMMUNICATION - I
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the content through the study of language and literature	
CO2[K2]	comprehend and respond to passages, situations and texts	
CO3[K3]	apply appropriate vocabulary and construct ideas	
CO4[K4]	analyze the prescribed literary pieces	
CO5[K5]	develop grammatical structures accurately and appraise literature	

Core Course		
Course Co	de: BDMC11	Course Title: CALCULUS AND TRIGONOMETRY
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of envelopes, curvature of the plane curves, hyperbolic	
	functions and trigonometry.	
CO2[K3]	construct reduction formulae for various functions.	
CO3[K3]	find the area and volume of the surfaces.	
CO4[K4]	simplify the problems of series involving trigonometric functions of multiple angles.	
CO5[K5]	evaluate problems in Calculus.	

Core Course		
Course Code: BDMC12		Course Title: AG3D AND VECTOR CALCULUS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of analytical geometry and vector calculus.	
CO2[K3]	describe about the properties of 3D space, scalar and vector valued functions.	
CO3[K3]	\$\zeta3]solve problems in straight line, plane and sphere.	
CO4[K4]	examine Green's, Gauss's and Stoke's theorem for vector valued functions.	
CO5[K5]	evaluate the area and volume of the surfaces	

Allied Course		
Course Code: BDMC1A Course Title: STATISTICS I		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the properties of statistical constants, correlation & regression and attributes.	
CO2[K3]	compute central tendencies, measures of dispersion, moments, correlation and regression.	
CO3[K3]	apply statistical techniques to find	solution for various problems in statistics.
CO4[K4]	analyze real life problems through statistical methods.	
CO5[K5]	evaluate the value of index numbe	r.

	A	llied Course	
Course Co	de: BDMC1A	Course Title: STATISTICS I	
On succes	sful completion of the course, the l	earners should be able to	
CO1[K2] explain the properties of statistical constants, correlation & regression and attributes.			
CO2[K3]	compute central tendencies, measures of dispersion, moments, correlation and		
CO3[K3]	apply statistical techniques to find	d solution for various problems in statistics	
CO4[K4]	analyze real life problems through	h statistical methods.	
CO5[K5]	evaluate the value of index numb	er.	
	VALUE A	ADDED COURSES	
Course Co	ode: BDES11	Course Title: ENVIRONMENTAL STUDIES	
On succes	sful completion of the course, the l	earners should be able to	
CO1[K2]	recognize the importance of envir	ronment and role of individual in its protection.	
CO2[K2]	represent the primary environment	ntal problems and its potential solutions.	
CO3[K3]	utilize the methods for the sustair	hable use of natural resources.	
CO4[K4]	social perspectives.	inable alternatives that integrate science, humanist and	
CO5[K4]	compare the structure and function human-environmental interaction	ons of ecosystems in the context of s.	
	பகுதி -	- I -பொதுத்தமிழ்	
Course Co	de: BDGT21	Course fitte: அற இலக்கியமும் தன்முன்னேற்றக கட்டுரைகளும்	
இப்பாடத்ன	த முழுமையாகக் கற்றபின் மாண	வியர் பெறும் திறன்கள்:	
CO1[K2]	அற இலக்கியங்களில் இடம்பெற்ற சிந்தனைகளையும் எடுக்குரைப்பர்	ழள்ள அறக்கருத்துக்களையும் வாழ்வியல் <mark>மு</mark> ன்னேற்றச்	
CO2[K3]	சொல்லின் வகைகளையும் கொடர்படையஇலக்கிய வாலார்பை	அதன் இலக்கணத்தையும் இப்பாடத்தோ(மயம் சான்றுகளுன் விளக்குவர்.	
CO3[K4]	ுதாடாபுடைய ஆலக்கிய வரலாறஸ்றயும் சான்றுகளுடன் வளக்குவா. :தனிமனித மற்றும் சமூக வாழ்வியலில் மக்கள் பின்பற்ற வேண்டிய அறங்களை அடையாளப்படுக்குவர்		
	ுகூடியாளப்படுத்துனா. வாழும் போதே சரித்திரம் படைத்தவர்களின் சாதனைகளை வரிசைப்படுத்துவர்.		
CO4[K4]	ு வாழும் பொதை சர்த்தரும் படைத	வாழ்வில் முன்னேர்ரும் பெறுவதர்கான வழிமுரைகளை மகிப்பிடுவர்.	

பகுதி - I -பொதுத்தமிழ்		
Course Co	de: BDGT21 Course Title: அந இலக்கியமும் தன்முன்னேற்றக் கட்டுரைகளும்	
இப்பாடத்தை முழுமையாகக் கற்றபின் மாணவியர் பெறும் திறன்கள்:		
CO1[K2]	அற இலக்கியங்களில் இடம்பெற்றுள்ள அறக்கருத்துக்களையும் வாழ்வியல் முன்னேற்றச்	
	சிந்தனைகளையும் எடுத்துரைப்பர்.	
CO2[K3]	சொல்லின் வகைகளையும் அதன் இலக்கணத்தையும் இப்பாடத்தோ	
	தொடர்புடையஇலக்கிய வரலாற்றையும் சான்றுகளுடன் விளக்குவர்.	
CO3[K4]	தனிமனித மற்றும் சமூக வாழ்வியலில் மக்கள் பின்பற்ற வேண்டிய அறங்கன	
	அடையாளப்படுத்துவர்.	
CO4[K4]	வாழும் போதே சரித்திரம் படைத்தவர்களின் சாதனைகளை வரிசைப்படுத்துவர்.	
CO5[K5]	வாழ்வில் முன்னேற்றம் பெறுவதற்கான வழிமுறைகளை மதிப்பிடுவர்.	

	PART – I – HINDI	LANGUAGE COURSE
Course Co	de: BDGH21	Course Title: HINDI LANGUAGE CO II
On succes	sful completion of the course, the lear	ners should be able to
CO1[K2]	explain the significant contributions writings	of the writers and the basics of grammar in
CO2[K2]	explain the renowned literary pieces write letters	, describe tourist spots and the methods to
CO3[K3]	identify the techniques and writing s	style of writers
CO4[K4]	analyse the literary elements in the v	vorks of writers
CO5[K5]	appraise the works of writers	
	PART – I – FRENC	H LANGUAGE COURSE Course Title:
Course Co	PART – I – FRENC de: BDGF21	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II
Course Co	PART – I – FRENC de: BDGF21 sful completion of the course, the lear	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to
Course Co On succes CO1[K2]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French
Course Co On success CO1[K2] CO2[K2]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French
Course Co On success CO1[K2] CO2[K2] CO3[K3]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French
Course Co On succes CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French h French day to day life in everyday life
Course Co On succes CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French day to day life in everyday life
Course Co On succes CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar PART I	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French day to day life in everyday life II- ENGLISH
Course Co On success CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5]	PART – I – FRENC de: BDGF21 stul completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar PART I de: BDGE21	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to mar in French day to day life in everyday life II- ENGLISH Course Title: ENGLISH FOR COMMUNICATION- II
Course Co On success CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5] CO5[K5]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar PART I de: BDGE21 sful completion of the course, the lear	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French day to day life in everyday life I – ENGLISH Course Title: ENGLISH FOR COMMUNICATION- II mers should be able to
Course Co On success CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5] CO5[K5]	PART – I – FRENC de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar PART I de: BDGE21 sful completion of the course, the lear explain the content through the study	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French day to day life in everyday life I – ENGLISH Course Title: ENGLISH FOR COMMUNICATION- II mers should be able to y of language and literature
Course Co On success CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5] CO5[K5] CO1[K2] CO2[K2]	PART – I – FRENC: de: BDGF21 stul completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar PART I de: BDGE21 stul completion of the course, the lear explain the content through the study comprehend and respond to passage	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French day to day life in everyday life II-ENGLISH Course Title: ENGLISH FOR COMMUNICATION- II mers should be able to y of language and literature s, situations and texts
Course Co On succes CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5] CO5[K5] CO1[K2] CO2[K2] CO2[K2] CO3[K3]	PART – I – FRENC: de: BDGF21 sful completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar PART I de: BDGE21 sful completion of the course, the lear explain the content through the study comprehend and respond to passage apply appropriate vocabulary and co	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French day to day life in everyday life II-ENGLISH Course Title: ENGLISH FOR COMMUNICATION- II mers should be able to y of language and literature s, situations and texts onstruct ideas
Course Co On success CO1[K2] CO2[K2] CO3[K3] CO4[K4] CO5[K5] CO5[K5] CO1[K2] CO1[K2] CO2[K2] CO3[K3] CO4[K4]	PART – I – FRENC: de: BDGF21 stul completion of the course, the lear explain the basic elements of gramm explain the grammatical concept use grammar in framing questions ir analyse the importance of French in assess the usage of French grammar PART I de: BDGE21 stul completion of the course, the lear explain the content through the study comprehend and respond to passage apply appropriate vocabulary and co analyze the prescribed literary piece	H LANGUAGE COURSE Course Title: FRENCH LANGUAGE COURSE- II mers should be able to har in French day to day life in everyday life II-ENGLISH Course Title: ENGLISH FOR COMMUNICATION- II mers should be able to y of language and literature s, situations and texts onstruct ideas s

PART – I – FRENCH LANGUAGE COURSE		
Course Code: BDGF21		Course Title: FRENCH LANGUAGE COURSE- II
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic elements of grammar in French	
CO2[K2]	explain the grammatical concept	
CO3[K3]	[K3] use grammar in framing questions in French	
CO4[K4]	analyse the importance of French in day to day life	
CO5[K5]	assess the usage of French grammar in everyday life	

PART II– ENGLISH		
Course Code: BDGE21		Course Title: ENGLISH FOR COMMUNICATION- II
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the content through the study of language and literature	
CO2[K2]	comprehend and respond to passages, situations and texts	
CO3[K3]	3] apply appropriate vocabulary and construct ideas	
CO4[K4]	analyze the prescribed literary pieces	
CO5[K5]	develop grammatical structures accurately and appraise literature	

Core Course		
Course Code: BDMC21		Course Title: THEORY OF EQUATIONS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamental concepts of theory of equations.	
CO2[K3]	solve equations by using relation between roots and coefficients.	
CO3[K3]	CO3[K3] apply computational techniques to find the solution of the equation.	
CO4[K4]	analyze the equation for its nature, position and roots.	
CO5[K5]	CO5[K5] evaluate the roots of the cubic equation.	

Core Course		
Course Code: BDMC22		Course Title: NUMERICAL METHODS
On success	sful completion of the course, the learn	ners should be able to
CO1[K2]	explain basic concepts and its proper	ties of algebraic, transcendental,
	simultaneous equations, difference operator, interpolation, numerical	
	differentiation /integration, solving Ordinary Differential Equations.	
CO2[K3]	apply iterative methods to determine approximate solution for any type of equation.	
CO3[K3]	compute numerical differentiation / integration for any function /data and	
	find numerical solution of Ordinary Differential Equations by applying	
	various methods.	
CO4[K4]	analyze data using numerical methods to obtain approximate solution for the	
	given problem.	
CO5[K5]	evaluate missing data for real life pro-	blems through interpolation.

Allied Course		
Course Code: BDMC2A		Course Title: STATISTICS II
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of probability and sampling theory.	
CO2[K3]	identify the test of significance for large and small samples.	
CO3[K3]	[3[K3] make use of computational/ statistical skills to solve the real-life problems.	
CO4[K4]	examine the nature of population by testing of hypothesis.	
CO5[K5]	evaluate problems through ANOVA.	

Allied Course		
Course Code: BDMC2AL		Course Title: STATISTICS LAB
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of R language.	
CO2[K3]	apply t-Test and F-Test for testing of samples.	
CO3[K4]	analyze different measures of central tendencies.	
CO4[K5]	evaluate correlation coefficient for any bivariate data.	
CO5[K6]	develop the programming skill to solve real life problems.	

VALUE ADDED COURSE

Course Code: BDVG21		Course Title: VALUE EDUCATION & GENDER STUDIES
On successful completion of the course, the learners should be able to		
CO1[K1]	D1[K1] recall the basic concepts of various categories of value education and gender	
CO2[K2]	outline the principles of personal, family, professional and societal values	
CO3[K2]	explain strategies that can attain ethic	cal-moral values, gender variations and gender

	equality
CO4[K4]	examine the multifaceted dimensions of women's role in the society with moral
	Values and ethics
CO5[K4]	analyze the elements of gender studies associated with values for peaceful and
	contented life

ABILITY ENHANCEMENT COURSE - SKILL BASED COURSE			
Course Co	de: BDCL23	Course Title: INTRODUCTION TO COMPUTERS & MS OFFICE	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the components of computer	and basics of office automation software	
CO2[K2]	summarize the features of windows of	operating system and PC software	
CO3[K2]	demonstrate the working of windows	s operating system	
CO4[K3]	utilize the word features for document	nt creation	
CO5[K4]	analyze the commands for simple vis	sual presentations	

	PART V		
Course Co	de: BDSA2	Course Title: SOCIAL AWARENESS PROGRAMMES & PHYSICAL EDUCATION	
On success	sful completion of the course, the learn	ers should be able to	
CO1[K3]	identify their interest, leadership skill	s and undertake challenges.	
CO2[K3]	adapt to work in team and communic	ate effectively with the society	
CO3[K3]	instill a sense of responsibility on env	vironmental issues and conservation of nature	
CO4[K6]	develop the habit of creating awarene	ess on health for society	
CO5[K6]	build up a positive image of women	with self-confidence and self-awareness.	

Course Co	de: BDSA2	Course Title: SOCIAL AWARENE PROGRAMMES & PHYSICAL EDUCA
On succes	sful completion of the course, the learn	hers should be able to
CO1[K3]	identify their interest, leadership skil	ls and undertake challenges.
CO2[K3]	adapt to work in team and communic	ate effectively with the society
CO3[K3]	instill a sense of responsibility on env	vironmental issues and conservation of na
CO4[K6]	develop the habit of creating awarene	ess on health for society
CO5[K6]	build up a positive image of women	with self-confidence and self-awareness.
Course Co	ae: മാറ്റ്രാവ ക ശശ്നമാവന്നക്ക് കർന്തിൽ ശത്തരിയ	ர் பெறும் கிரன்கள்
இப்பாடதல	ള ന്രന്ത്രത്ഥമ്പാള ന്യൂമ്പം ന്വം.	ப மாறும் அற்கைள் :
CO1[K2]	சமய இலக்கியங்கள் மற்றும் நாடகங் 	கள் புலப்படுத்தும் கருத்துக்களையும்
COMPA	ு செய்யுள் யாப்பு மர்புகளையும் எடுத்துரைப்பர். தையையார்கள் தொணை என் இன்னும் பாடு என்னும் பாடு என்னும் பாடு என்னும் பாடு என்னும் பாடு என்னும் பாடு என்னும் பாடு	
$\frac{CO2[K3]}{CO3[K4]}$	യ്യത്വാല്യാണ് കണ്ട് മാത്രം പ്രത്യം പ്രത	றும் மரபனை அடையாளப்படுத்துவா. ம் மாபனையும் அவர்களகுட இலக்கி
CO3[IX+]	இடம்பெற்றுள்ள பாரணக் கருக்குக்கு	ையும் ஆய்ந்தறிவர்.
CO4[K4]	ு குட்புகுப்பற்றுள்ள புராணம் கருத்துக்களையும் ஆய்ந்தற்றுள். சமய இலக்கியங்கள் உணர்க்காம் இளை மங்ஙம் கக்குவச் சிந்கனைகளை அராப்ச	
CO5[K5]	சமய இலக்கியங்கள் மற்றும் நாடகங்	களின் பொருண்மைகளை மதிப்பிடுவர்.
Course Co	HINDI LANG	UAGE COURSE Course Title: HINDI LANGUAGE COURSE-
0		
On succes	stul completion of the course, the learn	ters should be able to
	explain the significant contributions	of the writers and poetics
COMPAN	explain the renowned interary pieces	tule of writers
CO2[K2]		tyle of writers
CO2[K2] CO3[K3]	analyse the literary elements in the y	orks of writers
CO2[K2] CO3[K3] CO4[K4]	analyse the literary elements in the w	orks of writers

HINDI LANGUAGE COURSE		
Course Code: BDGH31		Course Title: HINDI LANGUAGE COURSE- III
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the significant contributions	of the writers and poetics
CO2[K2]	explain the renowned literary pieces	and describe factual reports for everyday life
CO3[K3]	identify the techniques and writing s	tyle of writers
CO4[K4]	analyse the literary elements in the w	orks of writers
CO5[K5]	appraise the works of writers	

FRENCH LANGUAGE COURSE			
Course Code: BDGF31		Course Title: FRENCH LANGUAGE COURSE- III	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the basic elements of gramma	ar in French	
CO2[K3]	explain the grammatical concept, express their feelings and opinions in French		
CO3[K3]	use grammar in framing correct sente	nces	
CO4[K4]	analyse the importance of French in day to day life		
CO5[K5]	assess the usage of French grammar	n everyday life	

PART II– ENGLISH			
Course Co	de: BDGE31	Course Title: ENGLISH FOR ENRICHMENT - I	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the content through the study	of language and literature	
CO2[K2]	comprehend and respond to passages	, situations and texts	
CO3[K3]	apply appropriate vocabulary and con	nstruct ideas	
CO4[K4]	analyze the prescribed literary pieces		
CO5[K5]	develop grammatical structures accur	ately and appraise literature	

Core Course			
Course Code: BDMC31		Course Title: MECHANICS	
On success	On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts & principl	es of statics and dynamics.	
CO2[K3]	apply the geometrical arguments for	proving the results in Mechanics.	
CO3[K3]	solve problems in Forces acting at	a point, Moments, Friction, Projectiles and	
	Collision using the laws and theorem	S.	
CO4[K4]	analyze the mechanism of physical pr	roblems.	
CO5[K5]	evaluate resultant of any number of	of forces acting on a particle in real life	
	problems.		

	Core Course		
Course Co	de: BDMC32 Course Title: DIFFERENTIAL EQUATIO		
On succes	sful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts of ODE, PDE and Laplace transforms.		
CO2[K3]	apply the concepts of first order differential equation in solving real life problems.		
CO3[K3]	solve the ODE and simultaneous linear differential equations by using Lap transforms.		
CO4[K4]	examine the different forms of ODE and PDE for finding the solutions.		
CO5[K5]	evaluate problems of ODE and PDE.		
CO1[K2]	explain the fundamentals of C and C++.		
Course Co	de: BDMC3A Course Title: PROGRAMMING IN C & C		
CO1[K2]	explain the fundamentals of C and C++.		
CO2[K3]	apply decision making, looping, branching statements, structure, union,		
<u>CO2[V2]</u>	constructor and destructor to create simple programs.		
CO3[K3]	Identify various dimensional arrays, string handling and user defined functions.		
$\frac{CO4[K4]}{CO5[K5]}$	analyze the concept of various types of operator overloading and inheritance.		
	Allied Course		
	Ameu Course		
Course Co	Dde: BDMC3AL Course Title: PROGRAMMING IN C & C LAB		
Course Con succes	Ode: BDMC3AL Course Title: PROGRAMMING IN C & C sful completion of the course, the learners should be able to		
Course Con succes	Amed Course ode: BDMC3AL Course Title: PROGRAMMING IN C & C sful completion of the course, the learners should be able to explain conditional, control making statements and OOPs for solving problems.		
Course Co On succes CO1[K2] CO2[K3]	Amed Course ode: BDMC3AL Course Title: PROGRAMMING IN C & C sful completion of the course, the learners should be able to explain conditional, control making statements and OOPs for solving problems. develop programming skills.		
Course C On succes CO1[K2] CO2[K3] CO3[K4]	Amed Course ode: BDMC3AL Course Title: PROGRAMMING IN C & C LAB sful completion of the course, the learners should be able to explain conditional, control making statements and OOPs for solving problems. develop programming skills. analyze the concepts of functions, structures, constructor and overloading.		
Course Consucces CO1[K2] CO2[K3] CO3[K4] CO4[K5]	Amed Course ode: BDMC3AL Course Title: PROGRAMMING IN C & C LAB sful completion of the course, the learners should be able to explain conditional, control making statements and OOPs for solving problems. develop programming skills. analyze the concepts of functions, structures, constructor and overloading. deduct and rectify errors in programs.		

Allied Course		
Course Co	de: BDMC3A	Course Title: PROGRAMMING IN C & C++
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the fundamentals of C and C++.	
CO2[K3]	apply decision making, looping, branching statements, structure, union,	
	constructor and destructor to create simple programs.	
CO3[K3]	identify various dimensional arrays, s	string handling and user defined functions.
CO4[K4]	analyze the concept of various types	of operator overloading and inheritance.
CO5[K5]	choose appropriate OOPs concept for	solving real life problems.

Allied Course			
Course Code: BDMC3AL		Course Title: PROGRAMMING IN C & C++ LAB	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain conditional, control making s	tatements and OOPs for solving problems.	
CO2[K3]	develop programming skills.		
CO3[K4]	analyze the concepts of functions, str	uctures, constructor and overloading.	
CO4[K5]	deduct and rectify errors in programs		
CO5[K6]	create programs for real life situation		

பொதுத்தமிழ		
Course Code: BDGT41 Course Title: கவிதை இலக்கியமும் சிறுகன	தயும	
இப்பாடத்தை முழுமையாகக் கற்றபின் மாணவியா் பெறும் திறன்கள்		
CO1[K2] இலக்கியங்களின் உட்பொருளினை எடுத்துரைப்பர்.		
CO2[K3] இலக்கிய வரலாறு, அணிவகைகளின் இலக்கணத்தையும், கலைச்சொற்களின்		
பொருளையும் அடையாளப்படுத்துவர்.		
CO3[K3] இலக்கியப் படைப்புகளில் பதிவாகியுள்ள சமூகச் சிந்தனைகளைக் கட்டமைப்பர்.		
CO4[K4] இலக்கியங்கள் புலப்படுத்தும் மனிதநேயக் கருத்துக்களை ஆராய்வர்		
CO5[K5] இலக்கியப் படைப்புகளில் இடம்பெறும் மாந்தர்களின் பண்புநலன்களை மதிப்பிடுவ	r.	

	பொதுத்தமிழ	
Course Co	de: BDGT41 Course Title: கவிதை இலக்கியமும் சிறுகதையும	
இப்பாடத்ன	த முழுமையாகக் கற்றபின் மாணவியா் பெறும் திறன்கள்	
CO1[K2]	இலக்கியங்களின் உட்பொருளினை எடுத்துரைப்பர்.	
CO2[K3]	இலக்கிய வரலாறு, அணிவகைகளின் இலக்கணத்தையும், கலைச்சொற்களின்	
002[122]	போருளையும் அடையாளப்படுத்துவர்.	
$\frac{\text{CO3[K3]}}{\text{CO4[K4]}}$	இலக்கியப் படைப்புகளில் பதிவாகியுள்ள சமூக்ச சிந்தனைகளைக் கட்டமைப்பா. டலைச்சியச்சான் பலப்படுச்சும் மனிசரோயச் சுசுச்சுச்சுதை வசய்லச்	
$\frac{CO4[K4]}{CO5[K5]}$	இலக்கியங்கள் புலப்படுத்தும் மனத்நேயக் கருத்துக்களை ஆராயவா	
CO2[K2]	இலக்கியப் படைப்புகளில் இடம்பெறும் மாந்தாகளின் பண்புநலன்களை மதிப்படுவா.	
Course Co	sful completion of the course, the learners should be able to	
O154000000000000000000000000000000000000	explain the significant contributions of the writers and the history of Hindi	
COI[II2]	Literature	
<u>CO3[K3]</u>	Enclature	
$\frac{\text{CO2[K2]}}{\text{CO2[K2]}}$	explain the fellowined interary pieces	
CO3[K3]	identify the techniques and writing style of writers and demonstrate the ability to	
COAFRAI	write on given topics	
	analyse the interary elements in the works of writers	
	FRENCH LANGUAGE COURSE	
a a	Course Title: FRENCH LANGUAGE COURS	
Course Co	ae: BDGF41 IV	
On succes	sful completion of the course, the learners should be able to	
011 500005	explain the basic elements of grammar in French	
CO1[K2]	explain the grammatical concept express their feelings and opinions in French	
CO1[K2]	explain the grammatical concept, express their feelings and opinions in French	
CO1[K2] CO2[K2]	vac growmen in froming correct contenace	
CO1[K2] CO2[K2] CO3[K3]	use grammar in framing correct sentences	
CO1[K2] CO2[K2] CO3[K3] CO4[K4]	use grammar in framing correct sentences analyse the importance of French in day to day life	

FRENCH LANGUAGE COURSE		
Course Code: BDGF41		Course Title: FRENCH LANGUAGE COURSE- IV
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic elements of grammar in French	
CO2[K2]	explain the grammatical concept, express their feelings and opinions in French	
CO3[K3]] use grammar in framing correct sentences	
CO4[K4]	analyse the importance of French in day to day life	
CO5[K5]	assess the usage of French grammar in everyday life	

rse Title: ENGLISH FOR ENRICHMENT - I ould be able to guage and literature tions and texts ideas and appraise literature e Course Title: GRAPH THEORY ould be able to ving characterization, equivalent conditions	
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ourse Title: SEQUENCES AND SERIES	
ould be able to	
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gent and oscillating sequences. vrization, equivalence criterions on	
gent and oscillating sequences. Prization, equivalence criterions on	
gent and oscillating sequences. erization, equivalence criterions on ious tests.	
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Core Course		
Course Code: BDMC41		Course Title: GRAPH THEORY
On successful completion of the course, the learners should be able to		
CO1[K2]] explain the basic concepts of graph theory.	
CO2[K3]	apply logical argument / algorithm for proving characterization, equivalent conditions	
	in graph theory.	
CO3[K3]	solve the real-life problems using graph theoretical structures.	
CO4[K4]	analyze the properties of vertex and edge colouring in graphs.	
CO5[K5]	prove the properties of different types of graphs.	

Core Course		
Course Code: BDMC42		Course Title: SEQUENCES AND SERIES
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts sequences and series.	
CO2[K3]	develop the properties of convergent, divergent and oscillating sequences.	
CO3[K3]	apply logical argument for proving characterization, equivalence criterions on	
	various concepts of sequences and series.	
CO4[K4]	analyze the behaviour of series through various tests.	
CO5[K5]	justify the nature of sequences.	

Allied Course		
Course Code: BDMC4A Course Title: PROGRAMMING IN PYTHO		
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the principles of Python.	
CO2[K2]	describe data types, operators, functions tuples, dictionaries and files.	
CO3[K3]	[3] use loops, functions and data types to write simple programs.	
CO4[K3]	CO4[K3] write Python program using OOPs.	
CO5[K4]	5[K4] analyze the process of structuring the data using Lists, Tuples and Dictionaries.	

Allied Course		
Course Code: BDMC4AL		Course Title: PROGRAMMING IN PYTHON LAB
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the structures and syntax of Python.	
CO2[K3]	write programs using data types, tuples and dictionaries.	
CO3[K4]] distinguish C and C++ with Python.	
CO4[K5]	deduct and rectify the errors in programs.	
CO5[K6]	develop their programming skills.	

DISCIPLINE SPECIFIC COURSE		
Course Code: BDMC4DSL		Course Title: MATHEMATICA LAB
On successful completion of the course, the learners should be able to		
CO1[K2]	explain the technical codings for efficient	t usage of Mathematica software.
CO2[K3]	apply the suitable syntax and semantics to solve real life problems.	
CO3[K3]	develop programming skills.	
CO4[K4]	analyze the concepts of algebra, graph theory and differential equations	
CO5[K5]	evaluate problems on integrals.	

Core Course		
Course Code: BDMC51		Course Title: REAL ANALYSIS
On successful completion of the course, the learners should be able to		
CO1[K2]	explain countability, basic concepts and the properties of metric spaces.	
CO2[K3]	make use of continuous functions to prove results in context of real line.	
CO3[K3]	identify the behaviour of complete metric space.	
CO4[K4]	analyze the characteristics and equivalent criterions of various concepts of R.	
CO5[K5]	prove theorems, results and corollaries on real line.	

	Core	Course
Cod	e: BDMC52	Course Title: MODERN ALGEBRA
cessf	ful completion of the course, the learn	ers should be able to
[2]	explain the basic concepts in Groups	and Rings.
[3]	apply the logical arguments for provi	ng the characterizations/equivalent conditions
	of algebraic structure.	
3]	solve problems using the results of Groups and Rings	
4]	analyze the nature and properties of F	Rings and Ideals.
5]	justify the statements in Groups / Rin	gs.
	Core	Course
Cod	e: BDMC5L	Course Title: MATLAB
cessf	ful completion of the course. the learn	ers should be able to
	explain the codings of MATLAB.	
21	1 find regression lines for any bivariate data.	
2] 3]	find regression lines for any bivariate	data.
2] 3]	find regression lines for any bivariate	data.
2] 3] 3]	find regression lines for any bivariate apply MATLAB tools for solving Ma	data.
2] 3] 3] 4]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations	data. athematical problems and drawing graphs. and find the solution.
2] 3] 3] 4] 5]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP	e data. athematical problems and drawing graphs. and find the solution. and value of integral.
2] 3] 3] 4] 5]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP	e data. athematical problems and drawing graphs. and find the solution. and value of integral.
2] 3] 3] 4] 5]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP Electiv	thematical problems and drawing graphs. and find the solution. and value of integral.
2] 3] 4] 5] Cod	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP Electiv e: BDMC5E1	thematical problems and drawing graphs. and find the solution. and value of integral.
2] 3] 4] 5] Cod cessf	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP Electiv e: BDMC5E1 ful completion of the course, the learn avalain LPP, canonical & standard for	e data. athematical problems and drawing graphs. and find the solution. and value of integral. re Course Course Title: LINEAR PROGRAMMING mers should be able to rem. primal dual form and sub (special classes)
2] 3] 4] 5] Cod cessf 2]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP Electiv e: BDMC5E1 ful completion of the course, the learn explain LPP, canonical & standard fo of LPP.	e data. Athematical problems and drawing graphs. and find the solution. and value of integral. The Course Course Title: LINEAR PROGRAMMING ters should be able to orm, primal-dual form and sub / special classes
2] 3] 4] 5] Cod cessf 2] 3]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP Elective e: BDMC5E1 ful completion of the course, the learn explain LPP, canonical & standard fo of LPP. apply efficient computational techniq optimization problems.	e data. Athematical problems and drawing graphs. and find the solution. and value of integral. The Course Course Title: LINEAR PROGRAMMING ters should be able to prm, primal-dual form and sub / special classes ues and algorithms that are needed to solve
2] 3] 4] 5] Cod cessf 2] 3] 3]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP evaluate the optimal solution of LPP e: BDMC5E1 ful completion of the course, the learn explain LPP, canonical & standard for of LPP. apply efficient computational techniq optimization problems. solve the balanced / unbalanced problem	e data. athematical problems and drawing graphs. and find the solution. and value of integral. The Course Course Title: LINEAR PROGRAMMING ters should be able to arm, primal-dual form and sub / special classes ues and algorithms that are needed to solve lems in sub/special classes of LPP.
2] 3] 4] 5] Cod cessf 2] 3] 4] 4]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP Electiv e: BDMC5E1 ful completion of the course, the learn explain LPP, canonical & standard for of LPP. apply efficient computational techniq optimization problems. solve the balanced / unbalanced problems.	e data. athematical problems and drawing graphs. and find the solution. and value of integral. The Course Title: LINEAR PROGRAMMING ters should be able to arm, primal-dual form and sub / special classes ues and algorithms that are needed to solve lems in sub/special classes of LPP. hbounded, degenerate/non degenerate
2] 3] 4] 5] Cod xessf 2] 3] 4] 4] 6]	find regression lines for any bivariate apply MATLAB tools for solving Ma analyze various differential equations evaluate the optimal solution of LPP evaluate the optimal solution of LPP Electiv e: BDMC5E1 ful completion of the course, the learn explain LPP, canonical & standard fo of LPP. apply efficient computational techniq optimization problems. solve the balanced / unbalanced problex examine feasible, infeasible, IBFS, un solutions to a LPP, TP and AP.	e data. Athematical problems and drawing graphs. and find the solution. and value of integral. The Course Title: LINEAR PROGRAMMING ters should be able to to mm, primal-dual form and sub / special classes ues and algorithms that are needed to solve lems in sub/special classes of LPP. hbounded, degenerate/non degenerate

Core Course		
ourse Code: BDMC52Course Title: MODERN ALGEBRA		
n successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic concepts in Groups and Rings.	
CO2[K3]	apply the logical arguments for proving the characterizations/equivalent conditions	
	of algebraic structure.	
CO3[K3]	solve problems using the results of Groups and Rings	
CO4[K4]	analyze the nature and properties of Rings and Ideals.	
CO5[K5]	justify the statements in Groups / Rings.	

Core Course			
Course Code: BDMC5L		Course Title: MATLAB	
On successful completion of the course, the learners should be able to			
CO1[K2]	explain the codings of MATLAB.		
CO2[K3]	find regression lines for any bivariate data.		
CO3[K3]	apply MATLAB tools for solving Mathematical problems and drawing graphs.		
CO4[K4]	analyze various differential equations and find the solution.		
CO5[K5]	evaluate the optimal solution of LPP and value of integral.		

Course Co		e Course
	de: BDMC52	Course Title: MODERN ALGEB
On succes	sful completion of the course, the lear	mers should be able to
CO1[K2]	explain the basic concepts in Groups	s and Rings.
CO2[K3]	apply the logical arguments for prov of algebraic structure.	ing the characterizations/equivalent condi
CO3[K3]	solve problems using the results of Groups and Rings	
CO4[K4]	analyze the nature and properties of	Rings and Ideals.
CO5[K5]	justify the statements in Groups / Ri	ngs.
Course Co On succes	Corde: BDMC5L	e Course Course Title: MATLAB There is should be able to
CO1[K2]	explain the codings of MATLAB.	
	1 0	
CO2[K3]	find regression lines for any bivariat	e data.
CO2[K3] CO3[K3]	find regression lines for any bivariat apply MATLAB tools for solving M	e data. Iathematical problems and drawing graphs
CO2[K3] CO3[K3] CO4[K4]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation	te data. Iathematical problems and drawing graphs as and find the solution.
CO2[K3] CO3[K3] CO4[K4] CO5[K5]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF	The data. Iathematical problems and drawing graphs as and find the solution. P and value of integral.
CO2[K3] CO3[K3] CO4[K4] CO5[K5]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF	The data. International problems and drawing graphs and find the solution. P and value of integral.
CO2[K3] CO3[K3] CO4[K4] CO5[K5]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF Electi de: BDMC5E1	The data. Iathematical problems and drawing graphs is and find the solution. P and value of integral. Integral. Integral. Integral. Integral. Integral.
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO5[K5]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF Electi de: BDMC5E1	The data. Iathematical problems and drawing graphs is and find the solution. P and value of integral. ive Course Course Course Title: LINEAR PROGRAMM mers should be able to
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO5[K5]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF Electi de: BDMC5E1 sful completion of the course, the lear explain LPP, canonical & standard f of LPP.	The data. Iathematical problems and drawing graphs is and find the solution. P and value of integral. Integral. Integral Integral Integrat In
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO5[K5]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF Electi de: BDMC5E1 sful completion of the course, the lear explain LPP, canonical & standard f of LPP. apply efficient computational techni optimization problems.	The data. Iathematical problems and drawing graphs is and find the solution. P and value of integral. Inve Course Course Course Title: LINEAR PROGRAMM There should be able to Form, primal-dual form and sub / special cl ques and algorithms that are needed to solution
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO5[K5] CO1[K2] CO2[K3] CO3[K3]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF Electi de: BDMC5E1 sful completion of the course, the lear explain LPP, canonical & standard f of LPP. apply efficient computational techni optimization problems. solve the balanced / unbalanced prob	The data. Iathematical problems and drawing graphs is and find the solution. P and value of integral. P and value of integral. Image: Course Course Course Course Title: LINEAR PROGRAMM Inters should be able to Form, primal-dual form and sub / special cl ques and algorithms that are needed to solution blems in sub/special classes of LPP.
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO5[K5] CO1[K2] CO1[K2] CO2[K3] CO3[K3] CO4[K4]	find regression lines for any bivariat apply MATLAB tools for solving M analyze various differential equation evaluate the optimal solution of LPF Electi de: BDMC5E1 sful completion of the course, the lear explain LPP, canonical & standard f of LPP. apply efficient computational techni optimization problems. solve the balanced / unbalanced prof examine feasible, infeasible, IBFS, u solutions to a LPP, TP and AP.	The data. Iathematical problems and drawing graphs is and find the solution. P and value of integral. P and value of integral. Integral Integral <t< td=""></t<>

Elective Course			
Course Code: BDMC5E2		Course Title: FOURIER ANALYSIS	
On successful completion of the course, the learners should be able to			
CO1[K2]	2] explain the expansion of periodic functions.		
CO2[K3]	apply mathematical skill to construct Fourier series for any function.		
CO3[K3]	K3] develop the finite Fourier sine cosine transform.		
CO4[K4]	[K4] analyze the applications of Fourier integrals formula.		
CO5[K6] construct the Fourier sine and cosine transform.			

Elective Course		
Course Code: BDMC5E3		Course Title: DISCRETE MATHEMATICS
On successful completion of the course, the learners should be able to		
CO1[K2] explain the basic principles of discrete Mathematical structures.		
CO2[K3]	CO2[K3] write the truth table for any logical statement.	
CO3[K3] identify the normal forms and quantifiers.		
CO4[K4]	[4] analyze the concept of Boolean algebra in switching circuits.	
CO5[K5]	CO5[K5] evaluate the types of Grammars and generate them for Languages.	

Elective Course		
Course Code: BDMC5E4		Course Title: MODERN APPLIED ALGEBRA
On successful completion of the course, the learners should be able to		
CO1[K2]	2] explain algebraic systems, Boolean algebra and lattice.	
CO2[K3]	[K3] apply algebraic structures to data communication.	
CO3[K3]	solve problems in modular and geometric lattices.	
CO4[K4]	analyze the concepts of coding and decoding digital information.	
CO5[K5]	evaluate problems on applied algebra	

Core Course		
Course Code: BDMC5V		Course Title: INTERNSHIP/ON-THE JOB TRAINING
On successful completion of the course, the learners should be able to		
CO1[K2]	2] relate the class room theory with work place practice.	
CO2[K3]	apply the practices / procedures observed	rved in real time working environment.
CO3[K4]] analyze the workflow and communication flow prevailing in the institution/industry.	
CO4[K5]	assess interests and abilities in their field of study .	
CO5[K6]	propose strategies, policies and guidelines for enhancing efficiency of	
	industrial/institutional operations.	

	SKILL BA	SED COURSES
Course Co	ode: BDCG51	Course Title: CAREER G
On succes	sful completion of the course, the lean	ners should be able to
CO1[K1]	recall the basic concepts about histo	ry, culture of India and languages.
CO2[K2]	summarize the various events related	d to Indian economy and Indian na
CO3[K2]	explain the multi - dimensional aspects of science.	
CO4[K3]	apply the mathematical knowledge t	o solve different problems.
CO5[K5]	analyze the problems related to men	tal ability and reasoning power.
	Cor	e Course
Course Co	ode: BDMC61	Course Title: COMPLEX
On succes	sful completion of the course, the lear	ners should be able to
CO1[K2]	explain the fundamental concepts of	complex numbers.
CO2[K3]	solve problems in context of comple	x numbers system.
CO2[K3] CO3[K3]	solve problems in context of comple- identify the behaviour of conformal	x numbers system. mapping and transformations.
CO2[K3] CO3[K3] CO4[K4]	solve problems in context of comple identify the behaviour of conformal analyze the characteristics and equiv numbers.	x numbers system. mapping and transformations. alence criterions of various concep
CO2[K3] CO3[K3] CO4[K4] CO5[K5]	solve problems in context of complex identify the behaviour of conformal analyze the characteristics and equiv numbers. prove theorems, corollaries and result	x numbers system. mapping and transformations. alence criterions of various concep Its of complex numbers.
CO2[K3] CO3[K3] CO4[K4] CO5[K5]	solve problems in context of complex identify the behaviour of conformal analyze the characteristics and equiv numbers. prove theorems, corollaries and result	x numbers system. mapping and transformations. alence criterions of various concep Its of complex numbers.
CO2[K3] CO3[K3] CO4[K4] CO5[K5]	solve problems in context of comple- identify the behaviour of conformal r analyze the characteristics and equiv- numbers. prove theorems, corollaries and result Cor	x numbers system. mapping and transformations. alence criterions of various concep Its of complex numbers. e Course
CO2[K3] CO3[K3] CO4[K4] CO5[K5] Course Co	solve problems in context of complex identify the behaviour of conformal r analyze the characteristics and equiv numbers. prove theorems, corollaries and result Cor ode: BDMC62	x numbers system. mapping and transformations. alence criterions of various concep its of complex numbers. e Course Course Title: LINEAR A
CO2[K3] CO3[K3] CO4[K4] CO5[K5] Course Co	solve problems in context of completidentify the behaviour of conformal manalyze the characteristics and equivinumbers. prove theorems, corollaries and resulting the completion of the course, the learned statement of the course statement of the course, the learned statement of the course statement of the course, the learned statement of the course statement of th	x numbers system. mapping and transformations. alence criterions of various concep Its of complex numbers. e Course Course Title: LINEAR A mers should be able to
CO2[K3] CO3[K3] CO4[K4] CO5[K5] Course Co On succes CO1[K2]	solve problems in context of comple identify the behaviour of conformal r analyze the characteristics and equiv numbers. prove theorems, corollaries and resul Cor de: BDMC62 sful completion of the course, the lear explain the fundamental concepts of	x numbers system. mapping and transformations. alence criterions of various concepts Its of complex numbers. e Course Course Title: LINEAR A mers should be able to The ar space and theory of matrix
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO1[K5] CO1[K2] CO2[K3]	solve problems in context of completidentify the behaviour of conformal manalyze the characteristics and equivinumbers. prove theorems, corollaries and resulting the completion of the course, the learner of the course, the learner explain the fundamental concepts of develop the properties of inner Prodematic concepts of the course of the properties of the course o	x numbers system. mapping and transformations. alence criterions of various concep Its of complex numbers. e Course Course Title: LINEAR A mers should be able to The space and theory of matrix uct Spaces and bilinear forms.
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO5[K5] CO1[K2] CO2[K3] CO3[K3]	solve problems in context of completidentify the behaviour of conformal manalyze the characteristics and equivinumbers. prove theorems, corollaries and result Corole: BDMC62 sful completion of the course, the lear explain the fundamental concepts of develop the properties of inner Prod solve problems in linear algebra and	x numbers system. mapping and transformations. alence criterions of various concepts ts of complex numbers. e Course Course Title: LINEAR A mers should be able to The space and theory of matrix. uct Spaces and bilinear forms. compute eigen values and e
CO2[K3] CO3[K3] CO4[K4] CO5[K5] CO5[K5] CO1[K2] CO2[K3] CO2[K3] CO3[K3]	solve problems in context of complexidentify the behaviour of conformal manalyze the characteristics and equivalent numbers. prove theorems, corollaries and result Corole: BDMC62 sful completion of the course, the least explain the fundamental concepts of develop the properties of inner Prod solve problems in linear algebra and analyze the characteristics and equivalent.	x numbers system. mapping and transformations. alence criterions of various concept its of complex numbers. e Course Course Title: LINEAR A rners should be able to Finear space and theory of matrix. uct Spaces and bilinear forms. I compute eigen values and eigen values

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	Core Course		
Course Code: BDMC61		Course Title: COMPLEX ANALYSIS	
On succes	On successful completion of the course, the learners should be able to		
CO1[K2]	O1[K2] explain the fundamental concepts of complex numbers.		
CO2[K3]	CO2[K3] solve problems in context of complex numbers system.		
CO3[K3]	CO3[K3] identify the behaviour of conformal mapping and transformations.		
CO4[K4]	4[K4] analyze the characteristics and equivalence criterions of various concepts of complex		
	numbers.		
CO5[K5]	prove theorems, corollaries and results	s of complex numbers.	

Core Course		
Course Code: BDMC62		Course Title: LINEAR ALGEBRA
On successful completion of the course, the learners should be able to		
CO1[K2]	CO1[K2] explain the fundamental concepts of linear space and theory of matrix.	
CO2[K3]	develop the properties of inner Produ	ct Spaces and bilinear forms.
CO3[K3] solve problems in linear algebra and compute eigen values and eigen vectors.		
CO4[K4]	4] analyze the characteristics and equivalence criterions of linear space and matrix theory	
CO5[K5]	prove theorems, results and corollarie	es on linear algebra.

Core Course		
e: BDMC6P	Course Title: Project	
On successful completion of the course, the learners should be able to		
explain the concept in their area of specialization.		
apply programming languages to solv	e real life problems.	
[4] analyze the strength and weakness of team work.		
develop presentation skills and leadership qualities.		
create new ideas in emerging trends of	of Mathematics.	
	Core e: BDMC6P ul completion of the course, the learn explain the concept in their area of sp apply programming languages to solv analyze the strength and weakness of develop presentation skills and leader create new ideas in emerging trends of	

	Core Course	
Course Co	ode: BDMC6P Course Title: Project	
On succes	ssful completion of the course, the learners should be able to	
CO1[K2]	explain the concept in their area of specialization.	
CO2[K3]	apply programming languages to solve real life problems.	
CO3[K4]	analyze the strength and weakness of team work.	
CO4[K5]	develop presentation skills and leadership qualities.	
CO5[K6]	create new ideas in emerging trends of Mathematics.	
	Core Course	
Course Co	ode: BDMC6L Course Title: MAPLE LAB	
On succes	ssful completion of the course, the learners should be able to	
$\frac{CO1[K2]}{CO1[K2]}$	explain the technical codings for efficient usage of Maple software.	
001[112]	explain the technical codings for efficient usage of Maple software.	
CO2[K3]	identify suitable tools to solve real life problems	
CO2[K3] CO3[K3]	identify suitable tools to solve real life problems. solve problems on matrices.	
CO2[K3] CO3[K3]	identify suitable tools to solve real life problems. solve problems on matrices.	
CO2[K3] CO3[K3] CO4[K5] CO5[K6]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations.	
CO2[K3] CO3[K3] CO4[K5] CO5[K6]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations.	
CO2[K3] CO3[K3] CO4[K5] CO5[K6]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations. Elective Course ode: BDMC6E1 Course Title: OPERATIONS RESEARCE	
CO2[K3] CO3[K3] CO4[K5] CO5[K6] CO5[K6]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations. create program for solving differential equations. Elective Course ode: BDMC6E1 Course Title: OPERATIONS RESEARCE ssful completion of the course, the learners should be able to	
CO2[K3] CO3[K3] CO4[K5] CO5[K6] CO5[K6] Course Co On succes CO1[K2]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations. create program for solving differential equations. Elective Course ode: BDMC6E1 Ssful completion of the course, the learners should be able to explain the basic concepts of decision making and optimization problem.	
CO2[K3] CO3[K3] CO4[K5] CO5[K6] CO5[K6] CO1[K2] CO2[K3]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. setup to the values of the course, the learners should be able to explain the basic concepts of decision making and optimization problem. write various types of queueing models.	
CO2[K3] CO3[K3] CO4[K5] CO5[K6] CO5[K6] CO1[K2] CO2[K3] CO3[K3]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations. Elective Course Ode: BDMC6E1 Course Title: OPERATIONS RESEARC ssful completion of the course, the learners should be able to explain the basic concepts of decision making and optimization problem. write various types of queueing models. apply quantitative technique to solve optimization problems.	
CO2[K3] CO3[K3] CO4[K5] CO5[K6] CO5[K6] CO1[K2] CO2[K3] CO2[K3] CO3[K3]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations. Elective Course Ode: BDMC6E1 Course Title: OPERATIONS RESEARCO ssful completion of the course, the learners should be able to explain the basic concepts of decision making and optimization problem. write various types of queueing models. apply quantitative technique to solve optimization problems. examine problems on queueing theory and inventory control. examine problems on queueing theory and inventory control.	
CO2[K3] CO3[K3] CO3[K3] CO4[K5] CO5[K6] CO5[K6] CO1[K2] CO1[K2] CO2[K3] CO3[K3] CO3[K3] CO4[K4] CO5[K5]	identify suitable tools to solve real life problems. solve problems on matrices. determine the values of trigonometric and algebraic functions. create program for solving differential equations. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. create program for solving differential equations. determine the values of trigonometric and algebraic functions. ssful completion of the course, the learners should be able to explain the basic concepts of decision making and optimization problem. write various types of queueing models. apply quantitative technique to solve optimization problems. examine problems on queueing theory and inventory control. evaluate problems on sequencing and replacement of machines to make effective	

Elective Course		
Course Code: BDMC6E1		Course Title: OPERATIONS RESEARCH
On successful completion of the course, the learners should be able to		
CO1[K2]	CO1[K2] explain the basic concepts of decision making and optimization problem.	
CO2[K3]] write various types of queueing models.	
CO3[K3]	CO3[K3] apply quantitative technique to solve optimization problems.	
CO4[K4]] examine problems on queueing theory and inventory control.	
CO5[K5]	CO5[K5] evaluate problems on sequencing and replacement of machines to make effective	
	business decisions.	

Elective Course			
Course Code: BDMC6E2		Course Title: AUTOMATA AND FORMAL	
		LANGUAGES	
On succes	On successful completion of the course, the learners should be able to		
CO1[K2]	explain the basic knowledge in automation and phrase structure grammars.		
CO2[K3]	construct derivation trees.		
CO3[K3]	3] apply the concepts in theoretical computer science.		
CO4[K4]	analyze regular languages.		
CO5[K5]	evaluate problems on automata and f	ormal languages.	

Non Major Elective Course				
Course Code: BDMC4N		Course Title: NUMERICAL APTITUDE I		
On successful completion of the course, the learners should be able to				
CO1[K2]	discuss the formulae to know the basics of quantitative aptitude.			
CO2[K2]	estimate problems on ratio and proportion & time and work.			
CO3[K3]	solve problems on permutations and combinations.			
CO4[K3]	develop skills to attend the competitive exams confidently.			
CO5[K4]	examine the problem solving skills on quantitative aptitude.			

Non Major Elective Course				
Course Code: BDMC5N		Course Title: NUMERICAL APTITUDE II		
On successful completion of the course, the learners should be able to				
CO1[K2]	discuss the basic formulae in mathematics.			
CO2[K2]	summarize solutions for arithmetic problems.			
CO3[K3]	find problems in volume and surface area.			
CO4[K3]	solve the problem solving skills in arithmetic.			
CO5[K4]	analyze skills to attend the competitive exams confidently.			

Job Oriented Course				
Course Code: BDJO70		Course Title: MATHEMATICAL STATISTICS		
On successful completion of the course, the learners should be able to				
CO1[K2]	explain the basic concepts of statistics.			
CO2[K3]	estimate a line of best fit.			
CO3[K3]	apply statistical techniques to solve real life problems.			
CO4[K4]	analyze various statistical parameters	h.		
CO5[K5]	evaluate correlation coefficient and form regression lines for any bivariate data.			

Job Oriented Course				
Course Code: BDJO70L		Course Title: - MATHEMATICAL STATISTICS LAB		
On successful completion of the course, the learners should be able to				
CO1[K2]	explain the fundamentals of SPSS package.			
CO2[K3]	apply SPSS packages to find solutions for various statistical parameters.			
CO3[K3]	analyze the bivariate data and form regression lines.			
CO4[K4]	compare various types of charts.			
CO5[K5]	evaluate problems in various disciplines.			