FATIMA COLLEGE (AUTONOMOUS)



Re-Accredited with "A" Grade by NAAC (3rd Cycle) 74th Rank in India Ranking 2020 (NIRF) by MHRD Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: MATHEMATICS

NAME OF THE PROGRAMME: B.Sc

PROGRAMME CODE : UAMA

ACADEMIC YEAR : 2022 – 2023

	To	epartment of Mathematics o be implemented from 2022-2023 onw
	Ve Co	nue: B5 orrened on: 16-3-2022 Convened at: 2
	Mer	nbers Present: (Names with Initial and signaturi)
Milita	1.	Dr. Pandia Raja University Nome Principal
1	1	Principal Thyagaraja College, Madurai-625009
	+	Mail ID: pandie raja @gmail. Mobile No: 7708091177
	2.	Dr.M. Navaneettaksishnan Subject Expert- Associate Professor & Head
		ANDCIAL METERS & ALDA
		Department of Mathematics Kamasaj College,
	6	Thoothukudi -628003
		Mail 20: navance Itan 65@yahoo. Co. is Mobile No: 9443871893
	3.	Dr.D. Muthuramakrishnan, Subject Enkert.
		Dean of Science. Head of the Department,
		Department of Mathematics
		National College.
		Mail 20: dmutherametrushnen@gma

	4.	Ms . S. Sindhuga	Industrialist.
		Samior Shakahical alliens	May I. Pana
		National Statistical office (FOD)	
		(FOD)	A land Talentin Manne
		Ministry of Stabishies	Managing phonon
	1 100	and Programme implementa	o madalace 9.1
		-tin	
	-	B wing and Floor Shastri	t rate Table 149 mg
	-	Bhavan,	
	-	Haddows Road	
	للآف	Nungambakkam,	scupping recommon 122
BRAC	2031-	Chennai -600006	cition all Audina
ow p		Dr. K.P. V-Preethi	
l ki	Jan 18	Assistant Professor	more of the last of the last
3.5	7 700	Department of Mathematics	es Did will spring the selling
hans		Saive Bhann Kshatriye College	ended to be a second
		Aruppukotfar -626101	more than the last
		Mail ID: Vpreethi 90@ yahoo, Com	Lavidanie De Sanseleval
		Mobile No: 9655234040	meneria? The
		Janas Commission of the Commis	May her loss Allestop
13	6.	Dr. A. PAULIN MARY	Head of the Department
V	- 22	who know will - the we	who and had been
Jel. 30	7.	Mrs. A. Sheela Roselin	Elai griening in 1
Agra		Dr. Sr. M. Fahma Mary	
		Dr. C. Prasanna Devi	
Rock	1	Dr. E. Helena	2 Adecima)
		Mrs. Nigile Ragavan	MICH "Sador"
	1	Mos. M. Teresa Nirmela	Ly adjance
		Dr. v. vanite	NOT IN
		Dr. M. V. Selter Meenekshi:	
		Mrs. R. Tenovi Rosay Deepse	

	Mrs. B. Velkamary Jeckfuiline Mrs. J. Annal Nercy.
	Vinules of the Board of Studies. Presentation of the Action Taken Report
	Activis Taken Report for 2021-2022 - US
S	No Common Suggestions offered Action Taken for the un the Previous Board Academic year 2021-2022.
	1. The Board recommended Compuler programming with to Shift Compuler program- C and object oriented ming with c and object programming with ct are
	oriented Programming Shifted to I and I Semestern with c++ from V and as Altied Papers. VI Semesters to I and I Semesters respectively
6	as Allied papers. The Board passed the The Syllabi passed by Sayllabus for new Self- the Board for new learning interdisciplinary Self-Learning Interdisciplinary.
	Course, "Mathematics hang Course, "Mathematics and Economics for and Economics for Competitive Framinations" Competitive Frami - Competitive Framinations" hatton's" (210GLM2SL) (210GLM2SL) for
	for advanced learners advanced learners of of I Uh, I Uh was Inplemented

Action	Taken	Report	tol	2021-	2022	- PG	,
110100				and the second second second second	and the second s	Name and Address of the Owner, where the Owner, which is the Owner, where the Owner, which is the Owner, where the Owner, which is the Owner, which i	

-			
811	Mariana Blancana Cable	a) samples	2
S. No	· Common Suggestions offered	Action Taken for	llie
	in the Previous Board	Academic year	2021-2022
	leve a paralla	MI 12 OM LIVER !	Do bern L
Ji.	The Board recommended to	Removed Class	cal Logic
13	Remove Grisp Sets and	an over View, R	
rol	Ruzzy Softs -Unit I,	logic in Unit	11
WH	Classical logie an over	Crisp Sets and	
	View, Fuzzy logic &	Sets & Neccessity	
-	Necessity measures in	w unit IV. Fur	
	Unit IV of 19PG3MEI	Measures of 1	PRIZME)_
	- Fuzzy Sets and ets	Fuzzy Sets and	its
wit.	Applications.	Applications and	Ita Code
-4	had a feet to the stand	no is changed to	21 PC3ME
2.	The Board passed the	The Syllabi ,	bassed
1 L	Syllabi for new Self-Learning		
	Course, "Verbal and Numerical		
1	Aptitude for National		
June	Examination", (21PGLM2SL)	Course, "Verba	I and
His	for advanced learners.	Numerical Apl	ritude
	of I Pa.	for National	Faminaho
	Contina	(21 Palm 2SL)	
		advanced les	
	Leady of God Thousand	of IPa wa	
	a look lowered bearing for	Emple mented	
	Markett Lant - Hear		
Cho	ange of Course Title:	Nil	
		•	
S.NO	Old Course New Course old Course Code Code Title	New Course Nee	d for
	Code Code little	Title Ch	ange
	The state of the s	Jak C	

		New (Cour	roes	I,	toduc	ed -U	h.		Act
	1	Course					and the same of th			Need for Entroduction
Salesia		21 UGLM:					1	- 1		Enable
sal la	2100	Ved Cle	D ext D	Econ	omi	s for	200	عصما	ENST	to appear
-	11	all in the	a rejet	Enar	nina	him	- Delice	1	(C2)	for compet
Sala an	alla	a Heere	1	5	wi Ç	7 94	weeld?		WEN	- Liva Exam
3111:00	BIV	Jew Co	ura	es	Int	roduce	d-P	a.	Unal	
क्षेत्र व्य	ad S.No.	Code	Co	The	Shee Shee	Relevance	Scope	D D	reed	for
po a	le:N	21PG1m2s	LV	erbal	and	National	Emp.	E	nable	the
8	SAME A	of solid	Ni Ap	meri b'hd	cel e for	lahovel	A my	8	Inderti ppear	for
has a	had had	WY Tolac				(21)	100		^	nations
Private S	(Revi	'sea	C	ours	us-	59		1	id her
- Coars	S.NO	Coole		itle		Tille of			Need	100
			14	M. I. Iv	will	s Revise The Contraction	ant	nun	Revision	'n
330	Aleba C S (a	2 PG3 MEI	Eaz and	ry sets	Unit	T. Cur	p 1 Sc	YAY	0 80	1113
			app	licahon	,	and				

	E Comme	Ry2	ny selo: c	lanical	107	Base
	- 257/10		ic: an overy Logic		1	lle fe
	i what si		+ 10 Fuzz			from
	Toradoko ()		rs: Necce			Shide
-			esmes.		1	Csyllab
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	docup 11-14-14		appear 20			too he
	advery/me.		Diamoli	The American	Barrell Land	for 6
1	Maissandie			<u> </u>		1000
9	No do Asia	al Oba	1510	- 1	0	Lia
2. (epdaturi et list	of open	J-duca	hmal	Resourses	s us
	the list	of reg	lerences	of ea	eh Counc	se - 0
0.1	Course coo	1. (TILL	I note:	1	nd = l =
240	CONY SE COO	le course	117,00	Juran	is of Uf	mans
		Lite of the second second		10111	Alberton Land	
1	1000 2005 101	2.100	Marken	1 Lithe	1/ mining	15.
.	19M3CC5/190	13ce Modern	Algebia	1. Litps	:// www.x	heneco
						- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
aun i	o Y Que	140 800	Bond	2. Lity	68:// www.b	rilanic.
aun i	o Y Que	Seguence	es and	2. Lity	68:// www.b S://www-c	rilanico Cuemat
aun i		140 800	es and	2. Lity	68:// www.b	rilanico Cuemat
2.	o Y Que	Segiona	es and	2. Lity 1. Lity 2. Lity	68:// www.b S:// www.v	Manice Cuemati niert.n
2.	19macc 57/ 1964CC7	Segience senies Object	es and	2. Lltg 1. Lttp 2. Lttp 1. LC	68:// www.b S:// www.c S:// www.v	mi-anic. cuemati n cert.n
2.	19M4CC7/ 1944CC7	Segience Senies Object Propar	es and	2. Lity 1. Lity 2. Lity 1. Lity 1. Lity	68:// www.b S:// www.v Eps:// www.v	mianice cuemate niert.n
3-	19m4cc 7/ 1964cc7 19m6mE3	Segrance Senier Object Propar	es and Osciented oming with	2. Lity 1. Lity 2. Lity 1. Lity 1. Lity Lity 2. Lity	68:// www.b S:// www.v 6:// www.v 6-ps:// www s. Com/	Milanica Cuemati Niert.n IN . Cpl
3-	19macc 57/ 1964CC7 19mbmE3	Segrance Senies Object Propar C++	es and Oriented orning will	2. Lety 1. Lety 2. Lety 1. Lety 2. Lety 4. Lety 2. Lety 2. Lety 2. Lety 2. Lety 2. Lety	bs://www.b s://www.v s://www.v tps://ww tps://www	mianic. cuemati niert.n INI. Cpl N. Cppe
2. 3-	19macc 7/ 1964cc7 19mame 3	Seguence Senier Object Propar C++	es and Osciented noming with	2. Ltp 1. Ltp 2. Ltp 1. htp 2. Ltp 1. htp 2. htp	bs://www.b s://www.v es://www.v es://www.v tps://ww com/ com/ com/ s:// math	Manic. Cuemati Niert.n IN . Cpl W . Cppe
2. 3-	19macc 57/ 1964 CC7 19mamE3	Segrance Senier Object Propar C++.	or and Oriented noming will Mathe	2. Ltp 1. Ltp 2. Ltp 1. ht 2. ht ence 1. ht	bs://www.b s://www.v s://www.v fps://www rCom/ com/ s://www.	Milanic. Cuemati Niert.n IN . Cpl N . Cppe
2. 3-	19macc 7/ 1964cc7 19mame 3	Segrance Senier Object Propar C++.	or and Oriented noming will Mathe	2. Ltp 1. Ltp 2. Ltp 1. ht 2. ht ence 1. ht	bs://www.b s://www.v s://www.v fps://www rCom/ com/ s://www.	Manic Cuemati Niert.h IN Cpl World
2· 3-	19macc 57/ 1964 CC7 19mamE3	Segionice Senier Object Propran C++.	oscented oming with	2. Lty 1. htp 2. htp 1. htp 2. ht 2. ht ence 1. ht+p usolf 2. wi	bs://www.bs://www.v s://www.v tps://www.v tps://www.v com/ com/ com/ s://www.v com/ com/ com/ com/ com/ com/ com/ com/ com/	Manic cuemat nert.h IN . Cpl world

	- ch	ation of		commed by	Challe Ly		and the second	11,210
1	S.No	Contra co		Course J		Detail Updak		
de	23	ELEVATOR I		A . L. Maryon	2/19/14	die lie		Shark
1 4	and.	19 PG3M	10	Ophmiz	ahun	http://	book.	o googl
	ral .			Technis		Com/be		A STATE OF THE STA
				a service to	4 × 3			l ophmi
					131- 324	The state of the s		1
11	2.	19PG 4ME	3	Cormal	on other de			iitkgp
-	702	19 PG 4 ME	40	Langua	Jes 10	v 1		se them
	-	43 (3.85)	25	A 100 M 100		2. http	5://b	eople, Cs
A	slock)	to el est	10	11+IT	20 may (3)	uchic	ago, e	eder/
1 (C)		ui pum	0}	Course	es - Uh	Den (20)		
	S.No	Code	of Ce	Course	NOSTIT Units R with the	le of euroed e Reuroed	y. of Perina	Need of
4	S.No	Code	Ce	Course	NOSTIT Units R with the Content	le of evised e Revised	y. of Perina	Need f
4)	S.No	Code 19m2cc3/	Of Ca Ti	Course	NOSTIT Units R Wilk th Comtent	le of euroed e Revised	Y. of Revins	Need f Revisa
4)	S.No	Code	Of Ca Ti	Course	Nos Tit Units R Wilk th Content Unit I Differen	le of evised e Revised	Y. of Revino	Need f Revisa Zhanic
4)	S.No	Code 19m2cc3/	Of Ca Ti	Course	Nos Tit Units R Wilk th Content Unit I Differen Egnahn	le of euroed e Reuroed hal	Y. of Reum	Need f Revisa Et nº la basic fer ft
4)	S.No	Code 19m2cc3/	Of Ca Ti	Course	Nos Tit Units R Wilk th Content Unit I Differen Egnahn	le of evised e Revised hal no of ocdes;	Y. of Revino	Need f Revisor Et n'h basic fer the
4)	S.No	Code 19m2cc3/	Of Ca Ti	Course	Nos Tit Unito R Wilk th Content Unit I, Differen Equation Rirst Vanab	le of euroed e Revised hal older; le	Y. of Revina Sy. Indu	Need f Revisa Et nº la basic fer the Other Content
4)	S.No	Code 19m2cc3/19C2cc3	Of Car	Course Jurse Humbal grahms	Nos Tit Unito R Wilk th Content Unit I, Differen Equation Rirst Vanab	le of evised e Revised hal no of ocdes;	Y. of Revina Sy. Indu	Need f Revisa Et nº la basic fer the Other Content
4)	S.No	Code 19m2cc3/	Of Car	Course Jurse Jenenhol gnahons	Nos Tit Units R Wilk th Content Unit I Differen Equation Cirst Vanab Separel Unit I	le of euroed Revised hal ocder; le sh Meltod	Y. of Revina Sy. Incha ded	Person Person Person Basic Jer H Other Center Of the Unit Basic
4)	S.No	Code 19m2cc3/19C2cc3	Of Car	Course Jurse Humbal grahms	Nos Tit Units R Wilk th Content Unit I Differen Equation Cirst Vanab Separel Unit I	le of euroed Revised hal ocder; le showor	Y. of Revina Sy. Incha ded	Revisa Revisa Basic Jer H Other Cember Of the Unit

						.3	
	as d	24:60	Variable	1			
		(Separable				
		60		•			and Sugar
	3.	21M3 Ac CI	Allied		Difteren-	5-1	Basic
mah	167		Mathema.	Indeline,			
LL	n .	0 0 0 0 0	ha-I	bof the			other
	12 6			bide,			Content
		_1-		Separeb	_		of the
W. A.	Sec	06	MALACA	■ The second of	AL AMEDI		
alt.	4.	22M6 CC14	Dynamic				A. J. Park
1	Section 1	: conable ed		A	e Motein	207	Shidenti
1	7.70	lens b					lean
		Yes		"Moment			"Simple
()				Inentia"			Harmonz
			and the same	ded: Un	_		Moturi"
				reaman			m XII Cld
	See	1.00	La company of the com		ing to	198	Physies.
4	والدا	and him		the chap	sten given		
cilal	142 l	was in cal					
واجالات	4	1	a Roll,				
	Re	viour o	onr/	ses - Pa			
		11 1201	Accord	7		_	
	S-No	Course	Course	Nodunits	1.0h	F	Veed for
		Code	Title	with the	Reviour		Revision
		1.418	The most	Content			
			prince.	melyo	Camp T	9.01	
	14	19 Palmy	Classicel	Um Z	27.	7	soo Leavy
		100	Mechanica		Remove	1	for the
1-3-17	dail.	the state of	com and	Theorem	1 1		Spedents.
	2.	19PG2M7	Differenhal	Unit 11 -			
	10:3		Equations	Linear	2>.		ا الله
				Egnahons	Includ	ed In	reded to

	1	1/2 01	ergilian gai	with vanable		pene other
	330			Coefficients		Theorems
		- 1	11	Sochur 9 of		01
4-2	MATA	Bearing !	Or to Table and	Chapler - 3.	NO.	3.
21.50	3.	19P41M2	Real	Unit1:		Too heavy
	1	able single	Analysis	Remove		for the
1	3-2	- A AAAAA	transal ve	appendin.		
in		beller	Dels toget	11	-ved	Shidents
		22842Mb		Onit I -		Board
		- Marie	Real			felt the
- de	Dox	a Elizadaka	Analysis	Several Variable		
Cinto.	1	of the ball	Long Standar	removed and		is too
1	-		A distant	other four		Leavy.
1000	A	- also	Jacks L	Units one		U
oragel a	6.9	2000	Les bab	Converted int		
2 (14)	2 12	100	Assessed to a	I unit.		
	1	22PG3M9	T .	Unit V _	20%	Board
		Landard or	00.50	Measure and		felt the
		C Joseph 1	Entegration	Integration in		Syllahm
				a Product		is docary
			- N - 000	Space is	o'mo	0
				removed and		
- July	A.ss.A	15/	Later de Ma	the first Unit	011	h 8 11
	4.0	0.4		is divided with		
	1	12.21		two Unto	144	
	6.	19 PG3 M12		Unit V.		1000
3 20	1 00	1		Countability and	21	Ith
		· thomas		Separahm	- 1 -	an
- A - 3			- artid	- 1 1	duced i	important
		A A A A A A A A A A A A A A A A A A A	0	Tychonoff's	900	Concept in
	2 11		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Teorem.	-	Topology

- A		ioneed on				
		Course				
		Code				and the second s
	1	Wanai Con		Mobel	Skill Deu.	700,60
1000		22M4SB2	rigonomel	com la	mile ludge	Concephie
						understand
ممد	1000	a slup	12-/1×	100	Course	and probl
MAR D	1.5	ed seined		477	cada	Colving
		R. Contract		Bold		abilit
La Day	40.11	Jestopland	Wolfer Well	washidas	GUDUER	Mana
1		O a sa a a a a a a a a		ا الاستا		
	2.	22UGMA4	Rinancia	Nahinel	Emp. S.D	To enhan
11	Mark	22UGMA4 SL	mathe-	Level		employab
	2 40		1 "		2. 199	ling Sku
· in	Vental.	a said take to a	Contracted to	market to		8
4.51	Pean		Land Maria	L Kand		
(1)	- 1. S.	The same of the same	1000	No. 1 Self		
	44.33	100				
4. 9	L 6					

	- 0	2 + 1 1			04	
	5. 1	nto duchon	of P.	rul	ly Skill -	Embedd
	cen	ificale / D	iploma/	Od	vanced Di	ploma
Sal.	val	ne adde	d Cour	ne	other to	an the
بمطنع	Va	lue adde	d Cow	se	that i	á-
	i al	ready	being	011	Leared.	
ada	Thole	Certificate C	ain ne Spe	oid	Arithmetr	is Chane
ady	Also' C	emputation al	Makemat	2,	is changed.	
Lastr	nehow			1 1 1		
لمتملط	S-No	Course	Course	7	210.100	C
		Code	Title		Skulls Sharpe hed	5 LCm
3					sharper and	our win
	1.	22UGVACMI	Duan Haha	NEU	Analytical	1 00 11 1
		100-00-1011/		IVCIN	Analytical	1. Develop
ad as		38 dus pr	Qualitative	. 57	Roasonij	Cueneral
1			Melhods			Mental
	9			1		Abeling
	1	estime we	Competitue	1 3 13		2. Apply
						Analytice
		0	Exami-	Z-28-y-2-1		Reasonin
			hatrons.		E Fresh Law San	3. Underst
				1	rol with	Pattern,
		A A A				and Probl
	1.				and the state of	Solving
	A A	1:	10000	2 5 9	a desired	technique
			1			to apple
						for
				1	14	Compethiu
	and the second s				Allega S. J. N.	onams'
	2	22UGVACGI	Concrete	WEW	Dralyh cel	
			Mathematic	1	Resonny	
					Skills	7
				M COL		974 33 44 34

6.	Rubrico for Butern Ship / Project
	S.No. C, C2 CIA Total Externel
10	20 mks 20 mks 60 mks
	1. tollowup Viva Voce
	after after 40 60 15 days completion
	15 days completion
	A sandanger in the sand of the
	For the 2020-2023 Batch, we the V and
	For the 2020-2023 Batch, to the V and VI Semester Elective papers cue interpanced
	Wasan and a second of the seco
	19M5ME 1/- Computer Programming un c
	1969mél C. D. A.
	19M5MEPI/19G5MEPI - C Prachical
	19m5mt2/- Object oriented Programming 19m5mt2 with C++
	1745 ME 2 With C
	19 MSMEP2/- C++ Prachical 19 GSMEP2
	19 Mhm = 3/- Cu = 2m Makamahaa
	19 MbME3/- Fuzzy Mathematics M 19 GbME3
2/22	19mbmE4 - Theory of Numbers.
-	For 2021-2024 Betch the following are the
	and and 3rd year papers.
	19M3CC5/19G3CC5 - Modern Algebra,
	19-M3CC6/19123 CC6 - Advanced Stabobis
	19M3CC6/191033CC6 - Advanced Stababis 19M4CC7/19G4CC7 - Seguences of Series
	19M4CL8/19G4CL8 - Linear Algebra
	19M5CC9/19M5CC9 - Real Analysis
	19M5 cc10/1965 cc10 - States
	19 M5 CC 11/19 is CC 11 - Linear Programming

	19m5cc12/19a5cc12 - Graph ?	Theory
	19MbCc13/19GbCc13 - Comple	a Analysis
	22mbec14/22GbCC14 - Dynam	
Ne	19MbCC15/19 016CC15 - Operation	s Research
140	19 m 3 s B 1 / 19 G 3 S B 1 - Applicatur	no of Calculus and
	Different	al Equations.
	22 M 45B2/22G4SB2 - Trigono	metry
	also (who had now it is a received to the	
	Name	Signature.
		mind and the state of the same
1	1. Dr. A. Paulin Mary	of for
40	1. Dr. A. Paulin Mary	To be who is the little of the
	2. Dr. D. Pandra Raja	Absent
	Conducte The committee on c	Stamon Plan
	3. Dr. M. Navaneelta Krishnan	
	10 CEMERIA C Back cel	LIAMEMER!
-	4. Dr. D. Nuthuramakrishnan	
+	to the contract of	I'M SINGERME
	5 Dr. K.P.V. Preethi	93MY Bali
	924	3 m 2 a P l
	6. Ms.S. Sindhuja	Absent.
		3 M d D P1
	J. Dr N. Malathi	Mality 76/03/22
est.		ac- 1000 cm and
	8. Mrs. A. Sheela Roselin	A Juli
	rece - Medica Migebra	1914 COSTAGO
	9. Dr. Sr. M. Fahina Mary	this a
	CALL TO ALABAMA TO A LAND	Markeynac
	10. Dr. C. Prasanna Dew	C. C. Ziel
	Le Warfel Lady - and	19 P. P. St. Va. P.1
	11. Dr. E. Helena	12 lelph
	Call - Linear Bagraman	LE DOTALITA SA

	10 M-0 1/2 P-11
-	12. Mrs. Nigila Ragavan
الديراو	12. Mrs. Nigila Ragavan Mijh 13. Mrs. M. Teresa Nismale W. Teura Viil
	13. Mrs. M. Teresa Nismale W. Terra Viil
	14. Dr. V. Vanika
1001	C: to known of Ecos. H. 2003 (povered at: 2)
	15 Mrs. R. Jenovi Rosary Deepa. & Seringham
	Mandan Hand Mana with install out
	16. Mrs. B. vetha Many Jackelin B. Wer Th
	17 00 - FO 1 00 - FO 10 0 10 10 10 10 10 10 10 10 10 10 10 1
,	17. Mrs. J. Annad Mercy Jan J. And M
And	18. Dr. K. Amuthe and the Annih
	18. Dr. K. Amulhe
	19 Dr. M. Rasi
	19 Ng. 101. Rust
	20. Dr. M. V. Sethy Meenanihis III M.V. J.hla.
4	DALLA SALANDERS AND AND SALANDERS AND SALAND
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	· Kanagai Pallise
	Theothy kndi -628003
	3. Dv. D. Nuthuramohn hope to
9.	Dean of Sciences and Cartisch Esse
	Head of the Department of the

VISION OF THE DEPARTMENT

To empower students both as individuals and as citizens in the society through Mathematics with sound knowledge and investigate new methodologies for future applications.

MISSION OF THE DEPARTMENT

- To achieve high standards of excellence in generating and propagating knowledge in Mathematics
- To lay a solid foundation for the concept of numeracy and scientific thinking
- To give the students, opportunities for developing, manipulative skills that will enable them function effectively in the society within the limits of their capacity
- To contribute to the development of students as Mathematical thinkers and to continue to grow in their chosen professions
- To enable the students to become lifelong learners and to function as productive citizens

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

	Our graduates will be academic, digital and
PEO 1	information literates; creative, inquisitive, innovative
	and desirous for the "more" in all aspects
	They will be efficient individual and team performers,
PEO 2	exhibiting progress, flexibility, transparency and
	accountability in their professional work
	The graduates will be effective managers of all sorts of
PEO 3	real – life and professional circumstances, making
	ethical decisions, pursuing excellence within the time
	framework and demonstrating apt leadership skills
	They will engage locally and globally, evincing social
PEO 4	and environmental stewardship demonstrating civic
1 20 4	responsibilities and employing right skills at the right
	moment

GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

	I. SOCIAL COMPETENCE
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy
GA 2	Hone creativity, passion for innovation and aspire excellence
GA 3	Enthusiasm towards emancipation and empowerment of humanity
GA 4	Potentials of being independent
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research
GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill- sets to interpret, analyse and solve social and environmental issues in diverse environments
GA 10	Self-awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to face and make changes building their strengths and improving on their weaknesses
GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for

GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised
GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario
	II. PROFESSIONAL COMPETENCE
GA 18	Optimism, flexibility and diligence that would make them professionally competent
GA 19	Prowess to be successful entrepreneurs and employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap Potentials
	III. ETHICAL COMPETENCE
GA 25	Integrity and discipline in bringing stability leading a systematic life promoting good human behaviour to build better society
GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life

GA 28	Social and Environmental Stewardship		
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience		
GA 30	Right life skills at the right moment		

PROGRAMME OUTCOMES (PO)

The learners will be able to

PO 1	Apply acquired scientific knowledge to solve complex issues.
PO 2	Attain Analytical skills to solve complex cultural, societal and environmental issues.
PO 3	Employ latest and updated tools and technologies to analyse complex issues.
PO 4	Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of B.Sc. Mathematics programme, the graduates would be able to

PSO 1	Gain broad knowledge and understanding in pure Mathematics and applications of Mathematics.
PSO 2	Demonstrate a computational ability and apply logical thinking skills to solve problems that can be modelled Mathematically.
PSO 3	Read, understand, analyse and formulate Mathematical theorems.
PSO 4	Acquire proficiency in the use of technology to assist in learning and investigating, Mathematical ideas and in problem solving.
PSO 5	Communicate Mathematical concepts accurately, precisely and effectively with clarity and coherence both verbal and in written form

(20 HRS.)

I B.Sc Mathematics SEMESTER -II OLD

For those who joined in 2019 onwards

PROGRAMME	COURSE	COURSE	CATEGOR	HRS/	CREDITS
CODE	CODE	TITLE	Y	WEEK	
UAMA	19M2CC3	DIFFERENTIA L EQUATIONS	Lecture	6	4

COURSE DESCRIPTION

This course will provide the knowledge for solving ordinary and partial differential equations

COURSE OBJECTIVES

To enable the students to get thorough knowledge of solving Differential Equations of first order, second order, Laplace transforms Partial differential equations.

UNIT I: DIFFERENTIAL EQUATIONS OF FIRST ORDER (20 HRS.)

Homogeneous equations – Non homogeneous equations of the first degree in x and y – Linear equations (Self Study) – Bernoulli's equation – Exact differential equation – Equations solvable for p – solvable for y – Clairaut's equation.

UNIT II: DIFFERENTIAL EQUATIONS OF SECOND ORDER (20 HRS.)

Linear equations with constant coefficients with terms of the form e^{ax} V on RHS – Linear equations with variable coefficients – Equations reducible to the linear homogeneous equations – methods of variation of parameters – Simultaneous linear differential equations.

UNIT III: LAPLACE TRANSFORMS

Laplace transforms – Laplace transforms of periodic functions – Some general theorems – The Inverse Laplace transforms – Solution of Differential equations using Laplace transform.

UNIT IV: PARTIAL DIFFERENTIAL EQUATIONS

(20 HRS.)

Formation of Partial Differential equations – First order Partial Differential Equations – Some standard forms – Lagrange's method – Charpit's method.

UNIT V: APPLICATIONS

(10 HRS.)

Applications of first order equations: Growth, decay and chemical reactions.

TEXT BOOKS:

 S. Narayanan, T.K. Manickavachagam Pillay - Differential Equation and its Applications - S. Viswanathan (Printers and Publishers) Pvt. Ltd.2006.

UNIT I: Chapter: 2- Sections: 1 - 6.4 & Chapter: 4 - Sections: 1 - 4.

UNIT II: Chapter: 5 - Sections: 1 - 6, Chapter: 6 - Sections: 1 - 6.

UNIT III: Chapter: 9 - Sections: 1 – 10.

UNIT V: Chapter: 3 - Section: 1.

2. Dr. S. Arumugam and Issac - Differential Equation and Applications - New Gamma Publishing House Nov- 2011.

UNIT II: Chapter: 2 - Sections: 2.5 Type D

UNIT IV: Chapter: 4 - Sections: 4.0 – 4.5.

REFERENCES:

- N.Ch.S.N.Iyengar Differential Equations Anmol publications pvt.ltd – 2000
- 2. Rasinghania Differential Equations S.Chand& Company limited 1997.

Digital Open Educational Resources

- 1.https://www.khanacademy.org/math/differential-equations
- 2.www.geeksforgeeks.org
- 3.www.khanacademy.org

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids		
UNIT -	1 DIFFERENTIAL	EQUATIO	ns of first	ORDER		
1.1	Homogeneous equations	2	Discussion	Green Board		
1.2	Non homogeneous equations of the first degree in x and y	3	Discussion	Green Board		
1.3	Linear equations	2	Discussion	Green Board		
1.4	Bernoulli's equation	2	Lecture	Green Board		
1.5	Exact differential equation	3	Lecture	Green Board		
1.6	Equations solvable for p	2	Lecture	Green Board		
1.7	solvable for x- solvable for y	3	Discussion	Black Board		
1.8	Clairauts equation	3	Discussion	Black Board		
UNIT -2	UNIT -2 DIFFERENTIAL EQUATIONS OF SECOND ORDER					
2.1	Linear equations with constant coefficients with terms of the form e^{ax} V on RHS	4	Chalk & Talk	Green Board		
2.2	Linear equations with variable coefficients	4	Chalk & Talk	Green Board		

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.3	Equations reducible to the linear homogeneous equations	4	Chalk & Talk	Green Board
2.4	Methods of variation of parameters	4	Chalk & Talk	Green Board
2.5	Simultaneous linear differential equations.	4	Chalk & Talk	Green Board
	UNIT -3LAPLACE 1	RANSFOR	MS	
3.1	Laplace transforms	4	Chalk & Talk	Green Board
3.2	Laplace transforms of periodic functions	2	Chalk & Talk	Green Board
3.3	Some general theorems	4	Chalk & Talk	Green Board
3.4	The Inverse Laplace transforms	5	Chalk & Talk	Green Board
3.5	Solution of Differential equations using Laplace transforms.	5	Chalk & Talk	Green Board
	UNIT -4 PARTIAL DIFFER	ENTIAL E	QUATIONS	
4.1	Formation of Partial Differential equations	4	Chalk & Talk	Green Board
4.2	First order Partial Differential Equations	4	Chalk & Talk	Green Board
4.3	Some standard forms	4	Chalk & Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids			
4.4	Lagrange's method	4	Chalk & Talk	Green Board			
4.5	Charpit's method.	4	Chalk & Talk	Green Board			
	UNIT -5 APPLICATIONS						
5.1	Applications of first order equations: Growth.	4	Discussion	РРТ			
5.2	Applications of first order equations: decay	3	Discussion	РРТ			
5.3	Applications of first order equations: chemical reactions.	3	Discussion	PPT			

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
К3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Schola stic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA				
Scholastic	35			
Non Scholastic	5			
	40			

✓ The levels of CIA Assessment based on Revised Bloom's Taxonomy are:

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

EVALUATION PATTERN

	SCHOLASTIC		NON - SCHOLASTIC	MARKS		8		
C1	C2	С3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C 3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C 5	-	Quiz	2 *	-	5 Mks
C6	_	Attendance		-	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Solve problems in differential equations of first order.	K1	PSO1& PSO2
CO 2	Classify homogeneous and Non homogeneous differential equations of second order and solve problems.	K1 & K2	PSO3
CO 3	Solve differential equation problems using Laplace transform.	K1 & K3	PSO5
CO 4	Define Partial differential equations and solve problems.	K1, K2 & K3	PSO4
CO 5	Solve problems on Growth, decay and chemical reactions	K2 & K4	PSO2

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	3	2	2	2
CO 2	2	2	3	2	2
co 3	2	2	2	2	3
CO 4	2	2	2	3	2
CO 5	2	3	2	2	2

Mapping COs Consistency with POs

CO / PO	PO1	PO2	РО3	PO4
CO 1	2	3	2	2
CO 2	2	3	2	3
CO 3	3	3	2	2
CO 4	2	3	2	3
CO 5	2	3	2	3

Note: ◆ Strongly Correlated – **3** ◆ Moderately Correlated – **2**

♦ Weakly Correlated -1

COURSE DESIGNER:

1. Mrs.A.Paulin Mary

Forwarded By

(Dr.A.Paulin Mary)

J.R

HOD's

Signature & Name

I B.Sc Mathematics

SEMESTER -II

NEW

For those who joined in 2019 onwards

PROGRAMME	COURSE	COURSE	CATEGOR	HRS/	CREDITS
CODE	CODE	TITLE	Y	WEEK	
UAMA	19M2CC3	DIFFERENTIA L EQUATIONS	Lecture	6	4

COURSE DESCRIPTION

This course will provide the knowledge for solving ordinary and partial differential equations

COURSE OBJECTIVES

To enable the students to get thorough knowledge of solving Differential Equations of first order, second order, Laplace transforms Partial differential equations.

UNIT I: DIFFERENTIAL EQUATIONS OF FIRST ORDER (20 HRS.)

Variables Separable method – Homogeneous equations – Non homogeneous equations of the first degree in x and y – Linear equations (Self Study) – Bernoulli's equation – Exact differential equation – Equations solvable for p – solvable for x – solvable for y – Clairaut's equation.

UNIT II: DIFFERENTIAL EQUATIONS OF SECOND ORDER (20 HRS.)

Linear equations with constant coefficients with terms of the form e^{ax} V on RHS – Linear equations with variable coefficients – Equations reducible to the linear homogeneous equations – methods of variation of parameters – Simultaneous linear differential equations.

UNIT III: LAPLACE TRANSFORMS

(20 HRS.)

Laplace transforms – Laplace transforms of periodic functions – Some

general theorems – The Inverse Laplace transforms – Solution of Differential equations using Laplace transform.

UNIT IV: PARTIAL DIFFERENTIAL EQUATIONS

(20 HRS.)

Formation of Partial Differential equations – First order Partial Differential Equations – Some standard forms – Lagrange's method – Charpit's method.

UNIT V: APPLICATIONS

(10 HRS.)

Applications of first order equations: Growth, decay and chemical reactions.

TEXT BOOKS:

1. S. Narayanan, T.K. Manickavachagam Pillay - Differential Equation and its Applications - S. Viswanathan (Printers and Publishers) Pvt. Ltd.2006.

UNIT I: Chapter: 2- Sections: 1 – 6.4 & Chapter: 4 - Sections 1 – 4.

UNIT II: Chapter: 5 - Sections: 1 - 6, Chapter: 6 - Sections: 1 - 6.

UNIT III: Chapter: 9 - Sections: 1 – 10.

UNIT V: Chapter: 3 - Section: 1.

2. Dr. S. Arumugam and Issac - Differential Equation and Applications - New Gamma Publishing House Nov- 2011.

UNIT II: Chapter: 2 - Sections: 2.5 Type D

UNIT IV: Chapter: 4 - Sections: 4.0 – 4.5.

REFERENCES:

- 1.N.Ch.S.N.Iyengar–Differential Equations– Anmol publications pvt.ltd 2000
- 2.Rasinghania Differential Equations S.Chand& Company limited 1997.

Digital Open Educational Resources

- 1.https://www.khanacademy.org/math/differential-equations
- 2.www.geeksforgeeks.org
- 3.www.khanacademy.org

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids		
UNIT -1 DIFFERENTIAL EQUATIONS OF FIRST						
1.1	Homogeneous equations	2	Discussion	Green Board		
1.2	Non homogeneous equations of the first degree in x and y	3	Discussion	Green Board		
1.3	Linear equations	2	Discussion	Green Board		
1.4	Bernoulli's equation	2	Lecture	Green Board		
1.5	Exact differential equation	3	Lecture	Green Board		
1.6	Equations solvable for p	2	Lecture	Green Board		
1.7	solvable for x- solvable for y	3	Discussion	Black Board		
1.8	Clairauts equation	3	Discussion	Black Board		
UNIT -2	DIFFERENTIAL EQU ORDER	JATIONS O	F SECOND			
2.1	Linear equations with constant coefficients with terms of the form e^{ax} V on RHS	4	Chalk & Talk	Green Board		
2.2	Linear equations with variable coefficients	4	Chalk & Talk	Green Board		

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.3	Equations reducible to the linear homogeneous equations	4	Chalk & Talk	Green Board
2.4	Methods of variation of parameters	4	Chalk & Talk	Green Board
2.5	Simultaneous linear differential equations.	4	Chalk & Talk	Green Board
	UNIT -3LAPLACE T	RANSFOR	MS	
3.1	Laplace transforms	4	Chalk & Talk	Green Board
3.2	Laplace transforms of periodic functions	2	Chalk & Talk	Green Board
3.3	Some general theorems	4	Chalk & Talk	Green Board
3.4	The Inverse Laplace transforms	5	Chalk & Talk	Green Board
3.5	Solution of Differential equations using Laplace transforms.	5	Chalk & Talk	Green Board
	UNIT -4 PARTIAL DIFFER	ENTIAL E	QUATIONS	
4.1	Formation of Partial Differential equations	4	Chalk & Talk	Green Board
4.2	First order Partial Differential Equations	4	Chalk & Talk	Green Board
4.3	Some standard forms	4	Chalk & Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids			
4.4	Lagrange's method	4	Chalk & Talk	Green Board			
4.5	Charpit's method.	4	Chalk & Talk	Green Board			
	UNIT -5 APPLICATIONS						
5.1	Applications of first order equations: Growth.	4	Discussion	PPT			
5.2	Applications of first order equations: decay	3	Discussion	РРТ			
5.3	Applications of first order equations: chemical reactions.	3	Discussion	PPT			

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
К3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	ı	5	ı	11	-	11	27.5 %
Non Schola stic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA					
Scholastic	35				
Non Scholastic	5				
	40				

✓ The levels of CIA Assessment based on Revised Bloom's Taxonomy are:

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

EVALUATION PATTERN

	SCHOLASTIC		NON - SCHOLASTIC		MARKS	5		
C1	C2	СЗ	C4	C5	C6	CIA	CIA ESE To	
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
СЗ	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C 5	-	Quiz	2 *	-	5 Mks
C6	_	Attendance		-	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Solve problems in differential equations of first order.	K1	PSO1& PSO2
CO 2	Classify homogeneous and Non homogeneous differential equations of second order and solve problems.	K1 & K2	PSO3
CO 3	Solve differential equation problems using Laplace transform.	K1 & K3	PSO5
CO 4	Define Partial differential equations and solve problems.	K1, K2 & K3	PSO4
CO 5	Solve problems on Growth,decay and chemical reactions	K2 & K4	PSO2

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	3	2	2	2
CO 2	2	2	3	2	2
CO 3	2	2	2	2	3
CO 4	2	2	2	3	2
CO 5	2	3	2	2	2

Mapping COs Consistency with POs

CO / PO	PO1	PO2	PO3	PO4
CO 1	2	3	2	2
CO 2	2	3	2	3
CO 3	3	3	2	2
CO 4	2	3	2	3
CO 5	2	3	2	3

Note: ◆ Strongly Correlated – **3** ◆ Moderately Correlated – **2**

♦ Weakly Correlated -1

COURSE DESIGNER:

1. Dr.Mrs.A.Paulin Mary

Forwarded By

(Dr.A.Paulin Mary)

J.R

HOD's

Signature & Name

OLD

I B.Sc Physics SEMESTER -II

For those who joined in 2019 onwards

PROGRAM	COURSE	COURSE TITLE	CATE	HRS/	CREDIT
ME CODE	CODE		GORY	WEEK	S
UAMA	21M2ACP2	ALLIED MATHEMATICS -II	Lecture	5	5

COURSE DESCRIPTION

This course provides the fundamentals concepts in various branches of Mathematics

COURSE OBJECTIVES

To enable the Physics Major Students to develop the skills of Mathematical reasoning and Analytical thinking in differential equation, Laplace transforms and Fourier series and Vector Calculus

UNIT I: DIFFERENTIAL EQUATIONS - I

(15 HRS.)

Homogeneous Equations in x and y – Non homogeneous equations of first degree in x and y - Exact equations. Linear equations of 2^{nd} order with constant coefficient with terms of the form $e^{ax}v$ on R.H.S.

UNIT II: DIFFERENTIAL EQUATIONS - II

(15 HRS.)

Equations of second order with variable coefficients (Right hand side of the form e^{ax} , x^n , cosax, sin ax, $e^{ax}v$)

UNIT III: LAPLACE TRANSFORMS & FOURIER SERIES (15 HRS.)

Standard Transforms – Inverse Laplace Transforms – application of Laplace transform to differential equations - Fourier series.

UNIT IV: VECTOR CALCULUS-DIFFERENTIATION OF VECTORS(15HRS.)

Vector differentiation, velocity, acceleration, vector operators – gradient, divergence, curl(Self Study). Their simple properties, directional derivatives – solenoidal – irrotational vectors.

UNIT V: INTEGRATION OF VECTOR AND ITS APPLICATIONS (15 HRS.)

Line, surface and volume integrals – Gauss, Greens and Stokes theorems (statements of the theorems only) – simple problems.

TEXT BOOK:

Dr. S. Arumugam & Issac, *Ancillary Mathematics*, New Gamma Publishing House.

REFERENCES:

- 1. S.Narayanan and T. K. Manicavachagam Pillai, *Differential Equations* and its
- 2. Applications, S. Viswanathan (Printers and Publishers), Pvt. Ltd, 2006
- 3. N.Ch.S.N.Iyengar, *Differential Equations*, Anmol publications pvt.ltd 2000.

Digital Open Educational Resources

https://	mathy	<u>vorld.y</u>	<u>wolfra</u>	m.com

www.britannica.com

COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids
	UNIT -1 DIFFERI	ENTIAL EC	QUATIONS -	I
1.1	Variable Seperable	2	Chalk & Talk	Black Board
1.2	Homogeneous Equations in x and y – Non homogeneous equations of first degree in x and y	4	Chalk & Talk	LCD
1.3	Exact equations	4	Lecture	PPT & White board
1.4	Linear equations of 2 nd order with constant coefficient with terms of the form e ^{ax} v on R.H.S	5	Lecture	Smart Board
UI	NIT - 2 DIFFERENTIAL	EQUATIO	NS – II	
2.1	Equations of second order with variable coefficients (Right hand side of the form e ax, x n)	8	Lecture	Green Board Charts
2.2	Equations of second order with variable coefficients (R.H.S of the form cos ax, sin ax, e axv)	7	Chalk & Talk	Green Board
	UNIT - 3 LAPLACE TRANSFOR	MS & FOU	JRIER SERI	ES
3.1	Standard Transforms	3	Chalk & Talk	Black Board

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids
3.2	Inverse Laplace Transforms	4	Chalk & Talk	Black Board
3.3	Application of Laplace transform to differential equations	4	Chalk & Talk	Black Board
3.4	Fourier series	4	Discussio n	Black Board
UNI	r - 4 VECTOR CALCULUS-DIFE	FERENTIA	TION OF VE	ECTORS
4.1	Vector differentiation, velocity, acceleration, vector operators	4 Chalk & Talk		Black Board
4.2	Gradient , divergence, curl Their simple properties	4	Chalk & Talk	Black Board
4.3	Directional derivatives	3	Discussio n	Black Board
4.4	Solenoidal – irrotational vectors	4	Chalk & Talk	Black Board
UI	NIT -5 INTEGRATION OF VECTO	OR AND IT	'S APPLICA'	rions
5.1	Line, surface and volume integrals	8	Chalk & Talk	Black Board
5.2	Gauss, Greens and Stokes theorems	7	Chalk & Talk	Black Board

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
К3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Schola stic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

✓ The levels of based on Taxonomy are

K1-

CIA
Scholastic 35
Non Scholastic 5
40

CIA Assessment
Revised Bloom's
:

Remember,

K2-Understand, **K3**-Apply, **K4**-Analyse

EVALUATION PATTERN

		schoi	LASTIC	:	NON - SCHOLASTIC	MARKS		8
C1	C2	С3	C4	C5	C6	CIA	CIA ESE	
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
СЗ	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C 5	_	Quiz	2 *	_	5 Mks
C6	_	Attendance		_	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Solve linear differential equations.	K1	PSO1
CO 2	Solve second order linear differential equations with variable coefficient.	K1 & K2	PSO3
CO 3	Define Laplace transform and apply it to solve differential equation.	K1 & K3	PSO5
CO 4	Explain the concepts of gradient, divergence, curl and their properties	K1, K2 & K3	PSO4
CO 5	Apply line, volume and surface integrals to verify the Gauss divergence and Stoke's theorem.	K2 & K4	PSO2

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	2	2	2	2
CO 2	2	2	3	2	2
CO 3	2	2	2	2	3
CO 4	2	2	2	3	2
CO 5	2	3	2	2	2

Mapping COs Consistency with POs

CO / PO	PO1	PO2	РО3	PO4
CO 1	2	ფ	2	2
CO 2	2	3	2	2
CO 3	3	2	2	2
CO 4	2	2	2	3
CO 5	3	2	2	2

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -1

COURSE DESIGNER:

1. Dr. Sr. Fatima Mary

Forwarded By

(Dr.A.Paulin Mary)

J.R

HOD's

Signature & Name

NEW

I B.Sc Physics SEMESTER -II

For those who joined in 2019 onwards

PROGRAM	COURSE	COURSE TITLE	CATE	HRS/	CREDIT
ME CODE	CODE		GORY	WEEK	S
UAMA	21M2ACP2	ALLIED MATHEMATICS -II	Lecture	5	5

COURSE DESCRIPTION

This course provides the fundamentals concepts in various branches of Mathematics

COURSE OBJECTIVES

To enable the Physics Major Students to develop the skills of Mathematical reasoning and Analytical thinking in differential equation, Laplace transforms and Fourier series and Vector Calculus

UNIT I: DIFFERENTIAL EQUATIONS - I 5% HRS.)

Variable separable - Homogeneous Equations in x and y – Non homogeneous equations of first degree in x and y - Exact equations. Linear equations of 2^{nd} order with constant coefficient with terms of the form $e^{ax}v$ on R.H.S.

UNIT II: DIFFERENTIAL EQUATIONS – II (15 HRS.)

Equations of second order with variable coefficients (Right hand side of the form e ^{ax},x ⁿ, cosax, sin ax, e ^{ax}v)

UNIT III: LAPLACE TRANSFORMS & FOURIER SERIES (15 HRS.)

Standard Transforms – Inverse Laplace Transforms – application of Laplace transform to differential equations - Fourier series.

UNIT IV: VECTOR CALCULUS-DIFFERENTIATION OF VECTORS(15HRS.)

Vector differentiation, velocity, acceleration, vector operators – gradient, divergence, curl(Self Study). Their simple properties, directional derivatives – solenoidal – irrotational vectors.

UNIT V: INTEGRATION OF VECTOR AND ITS APPLICATIONS (15 HRS.)

Line, surface and volume integrals – Gauss, Greens and Stokes theorems (statements of the theorems only) – simple problems.

TEXT BOOK:

Dr. S. Arumugam & Issac, *Ancillary Mathematics*, New Gamma Publishing House.

REFERENCES:

- 4. S.Narayanan and T. K. Manicavachagam Pillai, *Differential Equations* and its
- 5. Applications, S. Viswanathan (Printers and Publishers), Pvt. Ltd, 2006
- 6. N.Ch.S.N.Iyengar, *Differential Equations*, Anmol publications pvt.ltd 2000.

Digital Open Educational Resources

https://	mathy	<u>vorld.y</u>	<u>wolfra</u>	m.com

□ www.britannica.com

COURSE CONTENTS & LECTURE SCHEDULE:

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids				
UNIT -1 DIFFERENTIAL EQUATIONS - I								
1.1	Variable Seperable	2	Chalk & Talk	Black Board				
1.2	Homogeneous Equations in x and y – Non homogeneous equations of first degree in x and y	4	Chalk & Talk	LCD				
1.3	Exact equations	4	Lecture	PPT & White board				
1.4	Linear equations of 2 nd order with constant coefficient with terms of the form e ^{ax} v on R.H.S	5	Lecture	Smart Board				
UI	NIT - 2 DIFFERENTIAL	EQUATIO	NS – II					
2.1	Equations of second order with variable coefficients (Right hand side of the form e ax, x n)	8	Lecture	Green Board Charts				
2.2	Equations of second order with variable coefficients (R.H.S of the form cos ax, sin ax, e axv)	7	Chalk & Talk	Green Board				
	UNIT - 3 LAPLACE TRANSFOR	MS & FOU	URIER SERI	ES				

Modul e No.	Topic	No. of Lecture s	Teaching Pedagogy	Teaching Aids
3.1	Standard Transforms	3	Chalk & Talk	Black Board
3.2	Inverse Laplace Transforms	4	Chalk & Talk	Black Board
3.3	Application of Laplace transform to differential equations	4	Chalk & Talk	Black Board
3.4	Fourier series	4	Discussio n	Black Board
UNI	r - 4 VECTOR CALCULUS-DIFE	FERENTIA	TION OF VE	CTORS
4.1	Vector differentiation, velocity, acceleration, vector operators	4	Chalk & Talk	Black Board
4.2	Gradient , divergence, curl Their simple properties	4	Chalk & Talk	Black Board
4.3	Directional derivatives	3	Discussio n	Black Board
4.4	Solenoidal – irrotational vectors	4	Chalk & Talk	Black Board
UI	NIT -5 INTEGRATION OF VECTO	OR AND IT	'S APPLICA'	rions
5.1	Line, surface and volume integrals	8	Chalk & Talk	Black Board
5.2	Gauss, Greens and Stokes theorems	7	Chalk & Talk	Black Board

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
К3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Schola stic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

✓ The levels of based on Taxonomy are

Scholastic
Non Schola

CIA
Scholastic 35
Non Scholastic 5
40

CIA Assessment
Revised Bloom's
.

K1- Remember,

K2-Understand, **K3-**Apply, **K4-**Analyse

EVALUATION PATTERN

	SCHOLASTIC		NON - SCHOLASTIC		MARKS	3		
C1	C2	СЗ	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			No s		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
СЗ	_	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C 5	-	Quiz	2 *	-	5 Mks
C6	_	Attendance		_	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Solve linear differential equations.	K1	PSO1
CO 2	Solve second order linear differential equations with variable coefficient.	K1 & K2	PSO3
CO 3	Define Laplace transform and apply it to solve differential equation.	K1 & K3	PSO5
CO 4	Explain the concepts of gradient, divergence, curl and their properties	K1, K2 & K3	PSO4
CO 5	Apply line, volume and surface integrals to verify the Gauss divergence and Stoke's theorem.	K2 & K4	PSO2

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	2	2	2	2
CO 2	2	2	3	2	2
CO 3	2	2	2	2	3
CO 4	2	2	2	3	2
CO 5	2	3	2	2	2

Mapping COs Consistency with POs

CO / PO	PO1	PO2	РО3	PO4
CO 1	2	3	2	2
CO 2	2	3	2	2
CO 3	3	2	2	2
CO 4	2	2	2	3
CO 5	3	2	2	2

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -1

COURSE DESIGNER:

1.Dr. Sr. Fatima Mary

Forwarded By

J. R

(Dr.A.Paulin Mary)

HOD's

Signature & Name

5% added

II B.Sc Chemistry SEMESTER -III

For those who joined in 2019 onwards

PROGRAM	COURSE	COURSE	CATEGO	HRS/	CREDIT
ME CODE	CODE	TITLE	RY	WEEK	S
UAMA	19C3ACM 1	ALLIED MATHEMATIC S – I	Lecture	5	5

COURSE DESCRIPTION

The course develops Mathematical knowledge needed by the chemistry students.

COURSE OBJECTIVES

To enable the students to understand mathematical concepts like matrices, higher derivatives of functions, solving differential equations, trigonometric series, measures of dispersion and moments.

UNIT I: MATRICES (15 HRS.)

Introduction – Matrices – Rank of a Matrix – Elementary Transformations – Simultaneous Linear Equations - Cayley Hamilton theorem – Eigen Values and Eigen Vectors. **(Only Problems)**

UNIT II: HIGHER DERIVATIVES OF FUNCTIONS (15 HRS.)

Derivatives of hyperbolic functions - Successive differentiation and Leibnitz theorem.

UNIT III: EXACT DIFFERENTIAL EQUATIONS AND HIGHER ORDER DIFFERENTIAL EQUATIONS (15 HRS.)

Exact equations - Linear equations of 2 nd order with constant coefficient with terms of the form $e^{ax}v$ on R.H.S .

UNIT IV: TRIGONOMETRIC SERIES

(15 HRS.)

Expansions of sin nx, cos nx, tan nx, sin "x, cos "x - Series of sin x, cos x.

UNIT V: MEASURES OF DISPERSION AND MOMENTS (15 HRS.)

Mean, Median, Mode, Standard Deviation (self study), Karl Pearson's coefficient of skewness, Moments, Skewness and Kurtosis using moments.

TEXT BOOKS:

- 1. S. Arumugam & Isaac, *Ancillary Mathematics*, New Gamma Publishing House, Nov 2004.
- 2. S. Arumugam & Isaac, *Statistics*, New Gamma Publishing House, 2006.
- 3. S. Arumugam & Isaac, *Calculus*, New Gamma Publishing House, 2005.

REFERENCE BOOK:

1. S.Narayanan and T. K. Manicavachagam Pillai, *Differential Equations* and its Applications, S. Viswanathan (Printers and Publishers), Pvt. Ltd, 2006.

COURSE CONTENTS & LECTURE SCHEDULE:

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
UNIT	Ր -1		MATR	ICES
1.1	Matri ces	3	Chalk & Talk	Blac k Boar d
1.2	Rank of a Matri x	2	Chalk & Talk	Blac k Boa rd
1.3	Elem entar y Trans forma tions	2	Chalk & Talk	Blac k Boa rd
1.4	Simu ltane ous Linea r Equa tions	2	Chalk & Talk	Blac k Boa rd
1.5	Cayle y Hami Iton theor em	3	Chalk & Talk	Blac k Boa rd

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
1.6	Eigen Value s and Eigen Vecto rs	3	Chalk & Talk	Blac k Boa rd
UNIT 1	DERIVA	HI TIVES (CTIONS	GHER OF	
2.1	Deriv ative s of hype rboli c funct ions	8	Chalk & Talk	Blac k Boa rd
2.2	Succ essiv e differ entiat ion and Leibn itz theor em	7	Chalk & Talk	Blac k Boa rd

UNIT -3 EXACT DIFFERENTIAL EQUATIONS AND HIGHER ORDER DIFFERENTIAL EQUATIONS

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
3.1	Exact equat ions	2	Chalk & Talk	Blac k Boa rd
3.2	Linea r equat ions of 2 nd order with const ant coeffi cient with erms of the form e ax v on R.H.S	13	Chalk & Talk	Blac k Boa rd
T	RIGONO	UNIT -4 OMETRI	C SERII	ES
4.1	Expa nsio ns of sin nx, cos nx, tan nx,	8	Chalk & Talk	Blac k Boa rd

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
	sin ⁿ			
	x,			
	cos ⁿ			
	X			
	Serie			Blac
	s of		Chalk	k
4.2	sin x,	7	& T. 11	Boa rd
	cos x		Talk	
UNI7	_		EASURE MOMEI	
	Mean			Blac
	,			k Boa
	Medi			rd
	an,			
	Mode		Chalk	
5.1	,	7	& Talk	
	Stan		rant	
	dard			
	Devi			
	ation			
5.2	Karl Pears on's coeffi cient of skew ness	3	Chalk & Talk	Blac k Boa rd

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids					
5.3	Mom ents	1	Chalk & Talk	Blac k Boa rd					
5.4	Skew ness and Kurto sis using mom ents	4	Chalk & Talk	Blac k Boa rd					
	C1	C2	С3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	ı	-	ı	4	1	4	10 %
К2	2	2	5	-	-	9	-	9	22.5 %
К3	3	3	ı	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Schola stic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA				
Scholastic	35			
Non Scholastic	5			
	40			

✓ The levels of CIA Assessment based on Revised Bloom's Taxonomy are:

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

EVALUATION PATTERN

	SCHOLASTIC		NON - SCHOLASTIC		MARKS	5		
C 1	C2	СЗ	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C 3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	_	Attendance		_	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Appraise rank of a matrix, Eigen value and Eigen vectors	K1	PSO1
CO 2	Obtain higher derivatives of functions	K1 & K2	PSO3
CO 3	Solve exact and higher order differential equations	K1 & K3	PSO5
CO 4	Expand trigonometric functions	K1, K2 & K3	PSO4
CO 5	Define Moments, kurtosis and to apply the same	K2 & K4	PSO2

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	2	2	2	2
CO 2	2	2	3	2	2
CO 3	2	2	2	2	3
CO 4	2	2	2	3	2
CO 5	2	3	2	2	2

Mapping COs Consistency with POs

CO / PO	PO1	PO2	PO3	PO4
CO 1	2	3	3	2
CO 2	2	3	2	2
CO 3	2	3	2	2
CO 4	2	2	2	3
CO 5	3	2	2	2

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

lacktriangle Weakly Correlated -1

COURSE DESIGNER:

1. Dr. C.Prasanna Devi

Forwarded By

(Dr.A.Paulin Mary)

J. R.

HOD's

Signature & Name

II B.Sc Chemistry SEMESTER -III

For those who joined in 2019 onwards

PROGRAM	COURSE	COURSE	CATEGO	HRS/	CREDIT
ME CODE	CODE	TITLE	RY	WEEK	S
UAMA	21M3ACC 1	ALLIED MATHEMATIC S - I	Lecture	5	5

COURSE DESCRIPTION

The course develops Mathematical knowledge needed by the chemistry students.

COURSE OBJECTIVES

To enable the students to understand mathematical concepts like matrices, higher derivatives of functions, solving differential equations, trigonometric series, measures of dispersion and moments.

UNIT I: MATRICES (15 HRS.)

Introduction – Matrices – Rank of a Matrix – Elementary Transformations – Simultaneous Linear Equations - Cayley Hamilton theorem – Eigen Values and Eigen Vectors. **(Only Problems)**

UNIT II: HIGHER DERIVATIVES OF FUNCTIONS (15 HRS.)

Derivatives of hyperbolic functions - Successive differentiation and Leibnitz theorem.

UNIT III: EXACT DIFFERENTIAL EQUATIONS AND HIGHER ORDER DIFFERENTIAL EQUATIONS 5% (15 HRS.)

Differential Equations of first order - Variable separable - Exact equations - Linear equations of 2 $^{\rm nd}$ order with constant coefficient with terms of the form $e^{\rm ax}v$ on R.H.S.

UNIT IV: TRIGONOMETRIC SERIES

(15 HRS.)

Expansions of sin nx, cos nx, tan nx, sin "x, cos "x - Series of sin x, cos x.

UNIT V: MEASURES OF DISPERSION AND MOMENTS (15 HRS.)

Mean, Median, Mode, Standard Deviation (self study), Karl Pearson's coefficient of skewness, Moments, Skewness and Kurtosis using moments.

TEXT BOOKS:

- 1.S. Arumugam & Isaac, *Ancillary Mathematics*, New Gamma Publishing House, Nov 2004.
- 2.S. Arumugam & Isaac, Statistics, New Gamma Publishing House, 2006.
- 3.S. Arumugam & Isaac, Calculus, New Gamma Publishing House, 2005.

REFERENCE BOOK:

1.S.Narayanan and T. K. Manicavachagam Pillai, *Differential Equations* and its Applications, S. Viswanathan (Printers and Publishers), Pvt. Ltd, 2006.

COURSE CONTENTS & LECTURE SCHEDULE:

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
UNIT	Ր -1		MATR	ICES
1.1	Matri ces	3	Chalk & Talk	Blac k Boar d
1.2	Rank of a Matri x	2	Chalk & Talk	Blac k Boa rd
1.3	Elem entar y Trans forma tions	2	Chalk & Talk	Blac k Boa rd
1.4	Simu Itane ous Linea r Equa tions	2	Chalk & Talk	Blac k Boa rd
1.5	Cayle y Hami Iton theor em	3	Chalk & Talk	Blac k Boa rd
1.6	Eigen Value s and Eigen	3	Chalk & Talk	Blac k Boa rd

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
	Vecto rs			
	UNIT -2 HIGHER DERIVATIVES OF FUNCTIONS			
2.1	Deriv ative s of hype rboli c funct ions	8	Chalk & Talk	Blac k Boa rd
2.2	Succ essiv e differ entiat ion and Leibn itz theor em	7	Chalk & Talk	Blac k Boa rd
	NTIAL ER			
3.1	Exact equat ions	2	Chalk & Talk	Blac k Boa rd

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
3.2	Linea r equat ions of 2 nd order with const ant coeffi cient with erms of the form e ax v on R.H.S	13	Chalk & Talk	Blac k Boa rd
T	RIGONO	UNIT -4 OMETRI		ES
4.1	Expa nsio ns of sin nx, cos nx, tan nx, sin n x,	8	Chalk & Talk	Blac k Boa rd

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids
4.2	Serie s of sin x, cos x	7	Chalk & Talk	Blac k Boa rd
UNI7			EASURE MOME	
5.1	Mean , Medi an, Mode , Stan dard Devi ation	7	Chalk & Talk	Blac k Boa rd
5.2	Karl Pears on's coeffi cient of skew ness	3	Chalk & Talk	Blac k Boa rd
5.3	Mom ents	1	Chalk & Talk	Blac k Boa rd
5.4	Skew ness and Kurto	4	Chalk & Talk	Blac k

Mod ule No.	Topi c	No. of Lectu res	Teach ing Pedag ogy	Teac hing Aids					
	sis using mom ents			Boa rd					
	C1	C2	С3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
	Mks.	20 1/220/							
K1	Mks.	2	-	-	-	4	-	4	10 %
K1 K2					-	4 9	-	4	10 %
	2	2	-	-					
K2	2	2	- 5	-	-	9	-	9	22.5 %
K2 K3	2 2 3	2 2 3	- 5 -	-	5	9	-	9	22.5 % 27.5 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✓ The levels of CIA Assessment based on Revised Bloom's Taxonomy are:

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

EVALUATION PATTERN

	SCHOLASTIC		NON - SCHOLASTIC	MARKS		8		
C1	C2	СЗ	C4	C5	С6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
СЗ	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C 5	-	Quiz	2 *	-	5 Mks
C6	_	Attendance		_	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
	Appraise rank of a matrix, Eigen		PSO1
CO 1	value and Eigen vectors	K1	

CO 2	Obtain higher derivatives of functions	K1 & K2	PSO3
CO 3	Solve exact and higher order differential equations	K1 & K3	PSO5
CO 4	Expand trigonometric functions	K1, K2 & K3	PSO4
CO 5	Define Moments, kurtosis and to apply the same	K2 & K4	PSO2

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	2	2	2	2
CO 2	2	2	3	2	2
CO 3	2	2	2	2	3
CO 4	2	2	2	3	2
CO 5	2	3	2	2	2

Mapping COs Consistency with POs

CO / PO	PO1	PO2	РО3	PO4
CO 1	2	3	3	2
CO 2	2	3	2	2
CO 3	2	3	2	2
CO 4	2	2	2	3
CO 5	3	2	2	2

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

lacktriangle Weakly Correlated -1

COURSE DESIGNER:

1.Dr. C.Prasanna Devi

Forwarded By

(Dr.A.Paulin Mary)

J.R.

HOD's

Signature & Name

III B.Sc. MATHEMATICS SEMESTER -VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UAMA	19M6CC14	DYNAMICS	Lecture	5	4

COURSE DESCRIPTION

This course will provide a sound knowledge of the concepts and principles in Dynamics.

COURSE OBJECTIVES

The aim of the course is to help the students to understand the behaviour of projectiles, collision of elastic bodies, Simple harmonic motion and its properties, motion under the action of central forces.

UNIT -I PROJECTILES

(15 HRS.)

Definitions-Path of a Projectile-Characteristic of the motion of a Projectile – Velocity of the projectile in magnitude and direction- Range on an Inclined Plane– Motion on the surface of a smooth inclined plane - Enveloping parabola.

UNIT -II IMPULSIVE FORCES

(10 HRS.)

Impulse-Impulsive forces-Impact of two bodies- -Loss of Kinetic Energy in impact - Motion of a Shot and Gun – Impact of water on a surface.

UNIT -III COLLISION OF ELASTIC BODIES

(15 HRS.)

Introduction-Definitions-Fundamental laws of impact-Impact of a Smooth Sphere on a Fixed Smooth Plane-Direct Impact of Two Smooth Spheres-Loss of kinetic energy due to direct impact of smooth spheres-oblique impact of two smooth spheres-Loss of kinetic energy due to oblique impact of two smooth spheres-Dissipation of energy due to impact- Compression and Restitution.

UNIT -IV SIMPLE HARMONIC MOTION

(15 HRS.)

Introduction-Simple harmonic motion in a straight line-General solution of the S.H.M. equation-Geometrical representation of a S.H.M.-Change of origin-Composition of two Simple harmonic motions of the same period and in the same straight line-Composition of two simple harmonic motions of the same period in two perpendicular directions(Self Study)-Simple pendulum-Period of oscillation of a simple pendulum-Equivalent simple pendulum-The seconds pendulum.

UNIT -V MOTION UNDER THE ACTION OF CENTRAL FORCES (20 HRS.)

Velocity and acceleration in polar coordinates-Equations of motion in polar coordinates-Differential equation of the central orbit-Pedal Equation of some of the well known curves – Velocities in a central orbit – Apses and apsidal distances – Law of the inverse square-Law of the inverse cube(Self Study).

TEXT BOOK:

1. Dr.M.K. Venkataraman, *A Text Book of Dynamics*, Agasthiar Publications-2007.

UNIT I : Chapter 6

UNIT II: Chapter 7

UNIT III: Chapter 8

UNIT IV: Chapter 10 (10.1-10.7 & 10.12-10.15)

UNIT V: Chapter 11

REFERENCES:

- 1. P. Duraipandian & Lakshmi Duraipandian, *Mechanics*, S. Chand & Co., Fourth edition, Reprint 2003.
- 2. M.L. Khanna, *Dynamics of a rigid body*, Jai Prakash Nath & Co., Meerut, 1975.
- 3. Kaushal Kumar Singh, *A Text book of Dynamics*, Asoke K.Ghosh ,PHI Learning Private Limited-2011.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids	
	UNIT -1	PROJECT	riles		
1.1	Definitions-Path of a Projectile-Characteristic of the motion of a Projectile, Velocity of the projectile in magnitude and direction, theorems and problems.	6	Chalk & Talk	Black Board	
1.2	Range on an Inclined Plane, Motion on the surface of a smooth inclined plane and related problems.	5	Chalk & Talk	Black Board	
1.3	Enveloping parabola and related problems.		Chalk & Talk	Black Board	
	UNIT -2 IN	IPULSIVE FORCES			
2.1	Impulse, Impulsive forces, Impact of two bodies and problems.	3	Chalk & Talk	Black Board	
2.2	Loss of Kinetic Energy in impact, derivations and problems.	2	Chalk & Talk	Black Board	
2.3	Motion of a Shot and Gun- Problems	3	Chalk & Talk	Black Board	
2.4	Impact of water on a surface- problems	2	Chalk & Talk	Black Board	
U	NIT -3 COLLISIO	N OF ELAS	STIC BODIES	3	
3.1	Definitions, Fundamental laws of	4	Chalk &Talk	Black Board	

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	impact, Impact of a Smooth Sphere on a Fixed Smooth Plane and problems.			
3.2	Direct Impact of Two Smooth Spheres, Loss of kinetic energy due to direct impact of smooth spheres, derivations and problems.	4	Chalk & Talk	Black Board
3.3	oblique impact of two smooth spheres, Loss of kinetic energy due to oblique impact of two smooth spheres, derivations and problems.	4	Chalk & Talk	Black Board
3.4	Dissipation of energy due to impact, Compression and Restitution – problems.	3	Chalk & Talk	Black Board
	UNIT -4 SIMPLE	HARMONI	C MOTION	
4.1	Simple harmonic motion in a straight line, General solution of the S.H.M. equation, derivations and problems.	3	Chalk & Talk	Black Board
4.2	Geometrical representation of a S.H.M., Change of origin, derivations and problems.	2	Chalk & Talk	Black Board
4.3	Composition of two Simple harmonic motions of the same period and in the same straight line, Composition of two	2	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	simple harmonic motions of the same period in two perpendicular directions (self study)			
4.4	Simple pendulum-Period of oscillation of a simple pendulum, derivations and problems.	5	Chalk & Talk	Black Board
4.5	Equivalent simple pendulum, The seconds pendulum, derivations and problems.	3	Chalk & Talk	Black Board
UNIT -5	MOTION UNDER TH	E ACTION	OF CENTRA	L FORCES
5.1	Velocity and acceleration in polar coordinates, Equations of motion in polar coordinates and derivations.	4	Chalk & Talk	Black Board
5.2	Differential equation of the central orbit Pedal Equation of some of the well known curves, Velocities in a central orbit, derivations and problems.	7	Chalk & Talk	Black Board
5.3	Apses and apsidal distances related problems.	4	Chalk & Talk	Black Board
5.4	Law of the inverse square, Law of the inverse cube, derivations and problems.(self study)	5	Chalk & Talk	Black Board

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
К3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Schola stic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA				
Scholastic	35			
Non Scholastic	5			
	40			

✓ The levels of CIA Assessment based on Revised Bloom's Taxonomy are :

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

	SCHOLASTIC			NON - SCHOLASTIC		MARKS	3	
C1	C2	СЗ	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C 3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C 5	-	Quiz	2 *	-	5 Mks
C6	_	Attendance		_	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDG E LEVEL (ACCORDIN G TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Describe the behaviour related to projectiles.	K1	PSO1& PSO2
CO 2	Apply the laws and principles governing dynamics of the system in physical reality.	K2, K3	PSO2
CO 3	Describe the collision of elastic bodies.	K1 & K3	PSO4
CO 4	Explain Simple harmonic motion and its properties.	K1, K2, K3	PSO4&PSO5

$(\cdot (\cdot) \cdot)$	Explain the motion under the action of central forces.	K2 & K4	PSO4
-----------------------------	--	---------	------

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	3	2	2	2
co 2	2	3	2	2	2
co 3	2	2	2	3	2
CO 4	2	2	2	3	3
CO 5	2	2	2	3	2

Mapping COs Consistency with POs

CO / PO	PO1	PO2	PO3	PO4
CO 1	2	2	2	3
co 2	3	2	2	2
CO 3	2	2	2	3
CO 4	2	2	2	3
CO 5	2	2	2	3

Note: ◆ Strongly Correlated – **3** ◆ Moderately Correlated – **2**

♦ Weakly Correlated -1

COURSE DESIGNER:

1. Mrs. A. Paulin Mary

Forwarded By

J.R.

(Dr.A.Paulin Mary)

HOD's

Signature & Name

III B.Sc. MATHEMATICS SEMESTER -VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UAMA	22M6CC14	DYNAMICS	Lecture	5	4

COURSE DESCRIPTION

This course will provide a sound knowledge of the concepts and principles in Dynamics.

COURSE OBJECTIVES

The aim of the course is to help the students to understand the behaviour of projectiles, collision of elastic bodies, Simple harmonic motion and its properties, motion under the action of central forces.

UNIT -I PROJECTILES

(15 HRS.)

Definitions-Path of a Projectile-Characteristic of the motion of a Projectile – Velocity of the projectile in magnitude and direction- Range on an Inclined Plane– Motion on the surface of a smooth inclined plane - Enveloping parabola.

UNIT -II IMPULSIVE FORCES

(10 HRS.)

Impulse-Impulsive forces-Impact of two bodies- -Loss of Kinetic Energy in impact - Motion of a Shot and Gun – Impact of water on a surface.

UNIT -III COLLISION OF ELASTIC BODIES

(15 HRS.)

Introduction-Definitions-Fundamental laws of impact-Impact of a Smooth Sphere on a Fixed Smooth Plane-Direct Impact of Two Smooth Spheres-Loss of kinetic energy due to direct impact of smooth spheres-oblique impact of two smooth spheres-Loss of kinetic energy due to oblique impact of two smooth spheres-Dissipation of energy due to impact- Compression and

Restitution.

UNIT -IV MOTION UNDER THE ACTION OF CENTRAL FORCES

(20 HRS.)

Velocity and acceleration in polar coordinates-Equations of motion in polar coordinates-Differential equation of the central orbit-Pedal Equation of some of the well known curves – Velocities in a central orbit – Apses and apsidal distances – Law of the inverse square-Law of the inverse cube (Self Study).

UNIT -V MOMENT OF INERTIA

20%

(15

HRS.)

Definition-The Theorem of Parallel Axes- The Theorem of Perpendicular Axes Moment of Inertia in some particular cases- Dr. Routh's Rule -Equimomental systems.

TEXT BOOK:

2. Dr.M.K. Venkataraman, *A Text Book of Dynamics*, Agasthiar Publications-2007.

UNIT I : Chapter 6

UNIT II: Chapter 7

UNIT III: Chapter 8

UNIT IV: Chapter 11

UNIT V: Chapter 12

REFERENCES:

- 4. P. Duraipandian & Lakshmi Duraipandian, *Mechanics*, S. Chand & Co., Fourth edition, Reprint 2003.
- 5. M.L. Khanna, *Dynamics of a rigid body*, Jai Prakash Nath & Co., Meerut, 1975.
- 6. Kaushal Kumar Singh, *A Text book of Dynamics*, Asoke K.Ghosh ,PHI Learning Private Limited-2011.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	ule No. Topic		Teaching Pedagogy	Teaching Aids	
	UNIT -1	PROJEC1	riles		
1.1	Definitions-Path of a Projectile-Characteristic of the motion of a Projectile, Velocity of the projectile in magnitude and direction, theorems and problems.	6	Chalk & Talk	Black Board	
1.2	Range on an Inclined Plane, Motion on the surface of a smooth inclined plane and related problems.	5	Chalk & Talk	Black Board	
1.3	Enveloping parabola and related problems.		Chalk & Talk	Black Board	
	UNIT -2	MPULSIVE FORCES			
2.1	Impulse, Impulsive forces, Impact of two bodies and problems.	3	Chalk & Talk	Black Board	
2.2	Loss of Kinetic Energy in impact, derivations and problems.	2	Chalk & Talk	Black Board	
2.3	Motion of a Shot and Gun- Problems	3	Chalk & Talk	Black Board	
2.4 Impact of water on a surface- problems		2	Chalk & Talk	Black Board	
U	NIT -3 COLLISIO	N OF ELAS	STIC BODIES	3	
3.1	Definitions, Fundamental laws of impact, Impact of a Smooth Sphere on a Fixed Smooth Plane and	4	Chalk &Talk	Black Board	

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	problems.			
3.2	Direct Impact of Two Smooth Spheres, Loss of kinetic energy due to direct impact of smooth spheres, derivations and problems.	4	Chalk & Talk	Black Board
3.3	oblique impact of two smooth spheres, Loss of kinetic energy due to oblique impact of two smooth spheres, derivations and problems.	4	Chalk & Talk	Black Board
3.4	Dissipation of energy due to impact, Compression and Restitution – problems.	3	Chalk & Talk	Black Board
	UNIT -4 SIMPLE	HARMONI	C MOTION	
4.1	Simple harmonic motion in a straight line, General solution of the S.H.M. equation, derivations and problems.	3	Chalk & Talk	Black Board
4.2	Geometrical representation of a S.H.M., Change of origin, derivations and problems.	2	Chalk & Talk	Black Board
4.3	Composition of two Simple harmonic motions of the same period and in the same straight line, Composition of two simple harmonic motions of the same period in two	2	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	perpendicular directions (self study)			
4.4	Simple pendulum-Period of oscillation of a simple pendulum, derivations and problems.	5	Chalk & Talk	Black Board
4.5	Equivalent simple pendulum, The seconds pendulum, derivations and problems.	3	Chalk & Talk	Black Board
UNIT -5	MOTION UNDER TH	E ACTION	OF CENTRA	L FORCES
5.1	Velocity and acceleration in polar coordinates, Equations of motion in polar coordinates and derivations.	4	Chalk & Talk	Black Board
5.2	Differential equation of the central orbit Pedal Equation of some of the well known curves, Velocities in a central orbit, derivations and problems.	7	Chalk & Talk	Black Board
5.3	Apses and apsidal distances related problems.	4	Chalk & Talk	Black Board
5.4	Law of the inverse square, Law of the inverse cube, derivations and problems.(self study)	5	Chalk & Talk	Black Board

	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of
Levels	T1	T2	Quiz	Assig nment	OBT/PP T				Asses sment
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
К3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Schola stic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA				
Scholastic	35			
Non Scholastic	5			
	40			

✓ The levels of CIA Assessment based on Revised Bloom's Taxonomy are :

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

	SCHOLASTIC		NON - SCHOLASTIC		MARKS	3		
C1	C2	СЗ	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
СЗ	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C 5	-	Quiz	2 *	-	5 Mks
C6	_	Attendance		_	5 Mks

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Describe the behaviour related to projectiles.	K1	PSO1& PSO2
CO 2	Apply the laws and principles governing dynamics of the system in physical reality.	K2, K3	PSO2
CO 3	Describe the collision of elastic bodies.	K1 & K3	PSO4

CO 4	Explain Simple harmonic motion and its properties.	K1, K2, K3	PSO4&PSO5
CO 5	Explain the motion under the action of central forces.	K2 & K4	PSO4

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO 1	3	3	2	2	2
co 2	2	3	2	2	2
CO 3	2	2	2	3	2
CO 4	2	2	2	3	3
CO 5	2	2	2	3	2

CO / PO	PO1	PO2	РО3	PO4
CO 1	2	2	2	3
CO 2	3	2	2	2
CO 3	2	2	2	3
CO 4	2	2	2	3
CO 5	2	2	2	3

Note: ♦ Strongly Correlated – **3**

♦ Moderately Correlated – 2

♦ Weakly Correlated -1

COURSE DESIGNER:

2. Mrs. A. Paulin Mary

Forwarded By

(Dr.A.Paulin Mary)

HOD's

Signature & Name