Curriculum & Syllabus B.Sc., Mathematics

REGULATION 2023

Applicable for students admitted during Academic Year 2023-2024 Onwards Based on Outcome Based Education

PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY CURRICULUM AND SYLLABUS FOR B.Sc. (MATHEMATICS)

BACHELOR OF SCIENCE (THREE YEAR - FULL TIME)

REGULATION - 2023

SEMESTER - I

Part	Category	Course Code	Course Name	L	Т	Р	SS	Η	С
Ι	Language	XGT101	Tamil – I	3	0	0	0	3	3
II	Language	XGE102	English – I	3	0	0	0	3	3
III	Core – 1	XMT103	Algebra & Trigonometry	3	1	0	0	4	4
	Core – 2	XMT104	Differential Calculus	3	1	0	0	4	4
	Allied-1	XPG105	Allied Physics - I	2	1	0	0	4	3
	(GE)								
	Allied-1	XPG106	Allied Physics Practical - I	0	0	2	0	2	1
	(GE)								
IV	FC	XMT107	Foundation Course-Bridge Course	1	1	0	0	2	2
	UMAN - 1	XUM001	Human Ethics, Values, Rights and	1	0	0	1	1	1
			Gender Equality						
			Total	16	4	2	1	23	21

SEMESTER - II

Ι	Language	XGT201	Tamil – II	3	0	0	0	3	3
II	Language	XGE202	English – II	3	0	0	0	3	3
III	Core – 3	XMT203	Analytical Geometry 3-D and	3	1	0	0	4	4
			Integral Calculus						
	Core – 4	XMT204	Sequence and Series	3	1	0	0	4	4
	Allied- 2	XPG205	Allied Physics - II	2	1	0	0	3	3
	GE)								
	Allied- 2	XPG206	Allied Physics Practical - II	0	0	2	0	2	1
	GE)								
	SEC – 1	XMT207	Quantitative Aptitude – I	1	1	0	0	2	2
IV	UMAN - 2	XUM002	Environmental Studies	1	0	0	1	1	1
			Field Visit	0	0	0	0	0	2
			Total	16	4	2	1	22	23

Ι	Language	XGT301	Tamil – III	3	0	0	0	3	3
II	Language	XGE302	English – III	3	0	0	0	3	3
III	Core – 5	XMT303	Differential Equations and	3	1	0	0	4	4
			Applications						
	Core – 6	XMT304	Vector Calculus and Applications	3	1	0	0	4	4
	Allied – 3	XMT305	Statistics for Data Science - I	2	1	0	0	3	3
	(DSC)								
	Allied – 3	XMT306	Statistics for Data Science - I - Lab	0	0	2	0	2	1
	(DSC)		using R-Programming						
	SEC - 2	XMT307	Quantitative Aptitude - II	1	1	0	0	2	2
IV	GE: Open		Open Elective- I	3	0	0	0	3	3
	Elective								
	UMAN -3	XUM003	Disaster Management	1	0	0	1	1	1
			Total	19	4	2	1	25	24

SEMESTER - III

SEMESTER - IV

Ι	Language	XGT401	Tamil – IV	3	0	0	0	3	3
II	Language	XGE402	English – IV	3	0	0	0	3	3
III	Core – 7	XMT403	Object Oriented Programming with	3	1	0	0	4	4
			C++						
	Core - 8	XMT404	Fourier Series and Transforms	3	1	0	0	4	4
	Allied – 4	VMT405	Statistics for Data Science - II	2	1	0	0	3	3
	(DSC)	ANI 1403							
	Allied – 4	VMT406	Statistics for Data Science –II - Lab	0	0	2	0	2	1
	(DSC)	ANI 1400	using R-Programming						
	SEC - 3	XMT407	Vedic Mathematics - I	1	1	0	0	2	2
IV	GE: Open		Open Elective- 2	3	0	0	0	3	3
	Elective								
	UMAN - 4	XUM004	Introduction to Entrepreneurship	1	0	0	1	1	1
			Development						
			Total	19	4	2	1	25	24

SEMESTER -V

III	Core - 9	XMT501	Abstract Algebra	3	1	0	0	4	4
	Core - 10	XMT502	Real Analysis	3	1	0	0	4	4
	Core - 11	XMT503	Number Theory	3	1	0	0	4	4
	DSE - 1	XMT504A	Graph Theory						
		XMT504B	Mathematical Modeling						
		XMT504C	Numerical Methods with	3	1	0	0	4	4
			MATLAB						
		XMT504D	Discrete Mathematics						
	SEC - 4	XMT505	Vedic Mathematics - II	1	1	0	0	2	2
	NIME	XMT506	Python Programming /	2	1	0	0	3	3
	INIVIE		Mathematics for Finance						
	GE: Open		Open Elective- 3	3	0	0	0	3	3
	Elective								
IV	IPT		IPT/Internship	0	0	0	0	0	2
	Core		Project Phase - I	0	0	3	0	3	1
			Total	18	6	3	0	27	27

SEMESTER - VI

III	Core -12	XMT601	Complex Analysis	3	1	0	0	4	4
	Core -13	XMT602	Mechanics	3	1	0	0	4	4
	Core – 14	XMT603	Optimization Techniques	3	1	0	0	4	4
	DSE-2	XMT604A	Industrial Mathematics 4.0						
		XMT604B	Introduction to Machine Learning	3	1	0	0	4	4
		XMT604C	Astronomy						
		XMT604D	Stochastic Processes						
	Core-15	XMT605	Project Phase - II	1	0	4	0	5	3
IV	UMAN - 5	XUM005	Cyber Security	1	0	0	1	1	1
			Total	14	4	4	1	22	20
			Total Credit						139

NOTES ON CREDIT DISTRIBUTION AND COMPARISION WITH UGC LOCF GUIDELINES

S. No.	Type of Subject	Numbers	Total Credit (PMIST)	Credits As per UGC norms
1	AECC	04	12	08
2	Core Course (Theory & Lab)	19	76	84
3	DSE (Theory & Lab)	03	11	24
4	SEC-2 IKS-2	04	08	08
5	GE	03	09	24
6	UMAN	05	05	-
7	LAN	04	12	-
9	IPT	01	02	-
10	Field Visit	01	02	
11.	Foundation course	01	02	-
	Total	45	139	148

B.Sc. Mathematics Credit distribution

Distribution of different courses in each semester with their credits

SEMESTER	Compulsory	Discipline	Ability	Language	Generic	Skill	Total
	Core	specific	enhancement		elective	Enhancement	Credits
	Courses	Elective	Courses			courses	
			(AECC)			(SEC)	
Semester I	CC-1		AECC-1	LAN-1			20
	CC-2						
	A-1						
	FC-2						
Semester II	CC-3		AECC-2	LAN-2		SEC-1	20
	CC-4						
	A-2						
Semester III	CC-5		AECC-3	LAN-3	GE-1	SEC-2	23
	CC-6						
	A-3						
Semester IV	CC-7		AECC-4	LAN-4	GE-2	SEC-3	23
	CC-8						
	A-4						
Semester V	CC-9	DSE-1			GE-3	SEC-4	25
	CC-10	NME-1					
	CC-11						
	CC-15						
Semester VI	CC-12	DSE-2					19
	CC-13						
	CC-14						
	CC-15						
Total							
Credits	78	11	12	12	9	8	130
(PMIST)							
Extra	IPT-2						
Credit	Field Visit-2						
	UMAN-5						

for B.Sc. Mathematics Programme

Total Credits- 139

D (No of			Semo	esters			Total	UGC	Deviation	Total
Parts	Category of Courses	×Credits	I	п	ш	IV	v	VI	Credits	(Hons)	%	Marks
Part – I	Tamil – I / Foundational Tamil – I Tamil – II / Foundational Tamil – II Tamil – III and Tamil – IV	4 x 3	3	3	3	3			12	-	+12	200
Part – II	English I , English II, English III and English IV	4 x 3	3	3	3	3			12	8	+4	200
Part – III	Core	14 x 4	8	8	8	8	12	12	56			1200
Dort III	Allied Theory	4 x 4	3	3	3	3			12	84	-12	400
ran – 111	Allied Practical	4 x 1	1	1	1	1			4			400
Part – III	SEC: Skill Based Elective Course	4 x 2		2	2	2	2		8	8	-	400
Part – III	DSE: Discipline Specific Elective	2 x 4					4	4	8	24	-16	400
Part – IV	GE: Open Elective	3 x 3			3	3	3		9	24	-15	300
Part – IV	IPT: Internship Programme Training	1 x 2					2		2	-	+2	100
Part – IV	UMAN1:Human Ethics, Values, Rights, and Gender Equality UMAN2:Environmental Studies UMAN3:Disaster Management UMAN4: Introduction to Entrepreneurship Development UMAN5: Cyber Security	5 x 1	1	1	1	1		1	5	-	+5	400
Part – IV	Foundation Course-Bridge Course	1x2	2						2		+2	
Part – III	Project	1 x 4					1	3	4	-	+4	100
Part – IV	Field Visit	1 x 2		2					2	-	+2	100
Part – IV	Non Major Elective	1 x 3					3		3	-	+3	100
	Total		21	23	24	24	27	20	139	148	-5	4300

Total Credit and Mark Distribution

SEMESTER I

பொதுத்தமிழ் - 1 (முதற்பருவம்)

பாடக்குறியீடு / Course Code	பாடப்பெயர்/ Course Name	Category	L	Т	Ρ	SS	Н	С		
XGT101	பொதுத்தமிழ் - 1	Supportive	3	0	0	0	3	3		
Pre-requisite	பன்னிரெண்டாம்வகு	<u>5</u> ப்பில் தமிழை ஒருப	ாடமாகப்	ப் பயின்	றிருக்க	வேன்	ாடும்.			
பாடப்பயன்க ள் / Course outcomes	இப்பாடத்தைக் கற்ப	தால் பின்வரும் பயல்	ர்களை ப	மாணவ	ர்கள் அ	എடைவ	 .			
CO1	கவிதை இலக்கியம் அ படைப்பாற்றல் திறன்	றிமுகப்படுத்தப்படுவத பெறுதல்.	ால்		புரி (Ur	ந்துகொ nderstai	ாள்ளல் nd)			
CO2	புதுக்கவிதை வரலாற்ற	ினை அறிந்து கொள்வ	பர்.		புரி (Ur	புரிந்துகொள்ளல் (Understand)				
СОЗ	இக்கால இலக்கிய வன படைப்பாக்கத் திறனை	கையினைக் கற்பதன் மூ ாப் பெறுவர்.	லம்		பகு Ana	பகுப்பாய்வுசெய்தல் Analyze				
CO4	மொழி அறிவோடு சிந்	தனைத் திறன் அதிகரி _{ச்}	ந்தல்.		தெ (Ap	தெரிந்துகொள்ளல் (Apply)				
CO5	தமிழ்மொழியைப் கலைச்சொற்களை உரு	பிழையின்றி எ ₍ நவாக்கவும் அறிந்து ெ	ழதவும், காள்ளுத	புதி ;ல்.	ய புரி (Ur	ப புரிந்துகொள்ளல் (Understand)				
	K1- Remember; K2 -	- Understand; K3 –A	.pply; K∠	1						
	Analyze; K5 Evaluat	e; K6 – Create.								
அலகு - I		மரபுக்கவிதை			9	மணிகள்	'n			
	 பெ. சுந்தரனார் பாரதிதாசன் – க கவிமணி - புத்த முடியரசன் – பெ முடியரசன் – பெ கண்ணதாசன் புலம்பல். சுரதா துறைமுச 	- தமிழ்த்தெய்வ வணக் சிறுத்தையை வெளியே நரும் சிறுவனும் மாழி உணர்ச்சி – ஆட்டனத்தி ஆதி 5ம் தொகுப்பிலிருந்து ஏ	கம். பவா. மெந்தி – ரதேனும்	- ஆதிம ஒரு கவி	ந்தி தை					

	7. தமிழ் ஒளி - கடல்	
அலகு - II	புதுக்கவிதை	9 மணிகள்
	1. அப்துல்ரகுமான் – வீட்டுக்கு ஒருமரம் வளர்ப்போம்.	
	2. ஈரோடு தமிழன்பன் - வணக்கம் வள்ளுவ.	
	3. வைரமுத்து – பிற்சேர்க்கை	
	4. மு.மேத்தா – வாழை மரம்.	
	5. அறிவுமதி – வள்ளுவன் பத்து.	
	6. நா.முத்துக்குமார் – ஆனந்தயாழை மீட்டுகிறாய்.	
	7. சுகிர்தாராணி – சபிக்கப்பட்ட முத்தம்.	
	8. இளம்பிறை – நீ எழுத மறுக்கும் எனது அழகு.	
அலகு - III	சிறுகதைகள்	9 மணிகள்
	1. வாய்ச் சொற்கள் – ஜெயகாந்தன் (மாலை மயக்கம்	
	தொகுப்பு)	
	2. கடிதம் - புதுப்பித்தன்.	
	3. கரு - உமாமகேஸ்வரி.	
	4. முள்முடி - திஜானகிராமன்.	
	5. சிதறல்கள் - விழி.பா.இதயவேந்தன்.	
	6. காகிதஉறவு- சு.சமுத்திரம்.	
	7. வீட்டின் மூலையில் சமையலறை - அம்பை.	
	(மொழிபெயர்ப்புக் கதை) ஆண்டன் செக்காவ் –	
	நாய்க்காரச் சீமாட்டி.	
அலகு - IV	இலக்கியவரலாறு	9 மணிகள்
	பாடம் தழுவிய இலக்கிய வரலாறு	
அலகு - V	மொழித் திறன்/ போட்டித் தேர்வு	9 மணிகள்
	1. பொருள் பொதிந்த சொற்றொடர் அமைத்தல்	
	2. ஓர் எழுத்து ஒருமொழி	
	3. வேற்றுமை உருபுகள்	
	4. திணை, பால், எண், இடம்	
	5. கலைச் சொல்லாக்கம், மொழிபெயர்ப்பு	

	(குறிப்பு : அலகு 4, 5 ஆகிய பகுதிகள் போட்டித்தே	நர்வு	
	நோக்கில் நடத்தப்பட வேண்டும்)		
		(9 மணிகள்
பாடநூல்கள்			
1.	மேலே சுட்டப்பட்டுள்ள கவிதைகள், பாடம் தொடர்புடைய நூ	ல்கள்	
பார்வைநூல்கள்			
1.	தமிழ் இலக்கிய வரலாறு – சிற்பி பாலசுப்பிரமணியன்.		
2.	புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு - தமிழண்ணல்		
3.	வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு –		
	எஃப்.பாக்கியமேரி.		

b Sou	urces
•	Tamil Heritage Foundation - www.tamilheritage.org <http: www.tamilheritage.org=""></http:>
•	Tamil virtual University Library - www.tamilvu.org/library http://www.virtualvu.org/library
•	Project Madurai - www.projectmadurai.org.
•	Chennai Library - www.chennailibrary.com <http: www.chennailibrary.com="">.</http:>
•	Tamil Universal Digital Library-www.ulib.prg <http: www.ulib.prg="">.</http:>
•	Tamil E-Books Downloads – tamilebooksdownloads.blogspot.com
•	Tamil Books online - books.tamilcube.com
•	Catalogue of the Tamil books in the Library of British Congress archive.org
•	Tamil novels online - books.tamilcube.com

COU	RSE (CODE	XGE102	L	Т	SS	H	С		
COU	RSEN	NAME	ENGLISH I	3	0	0	0	3	3	
C:P:A	A- 3:0	:0		1	1			1		
COU	RSE (OUTCOM	ES:	D	omai	n	Ι	Level		
After	the c	ompletion	of course, the learners will be able to get							
comp	rehen	sive skills	like:							
CO1	De Lis	e <i>velop</i> and in stening, Spea	tegrate the use of the four language skills i.e. Reading, aking and Writing	Co	gniti	ve	Un	Understand		
CO2	U	<i>nderstand</i> the	e total content and underlying meaning in the context.	Co	gniti	ve	I	Apply	r	
CO3	Fa	orm the habit	of reading for pleasure and for information	Co	gniti	ve	Und	ersta	nd	
CO4	Ca	omprehend n	naterial other than the prescribed text	Co	gniti	ve	Un	dersta	ınd	
CO5	Do fu	evelop the l ture, to pres	linguistic competence that enables them, in the ent the culture and civilization of their nation.	Co	gniti	ve	Un	dersta	ınd	
SYLL	ABU	S						HOURS		
UNIT	'-I	POETRY			6-	6+3+0=9				
11	A Pa	tch of Land	- Subramania Bharati							
1.2	2 The	Sparrow - P	aul Laurence Dunbar							
1.3	AN	ation's Strei	ngth – Ralph Waldo Emerson							
1.4	Love	e Cycle - Ch	inua Achebe							
UNIT	'-II	PROSE					6-	+3+0=	=9	
2.1	JRD	- Harish B	hat							
2.2 2.3	Us a Unc	nd Them - le Podger I	David Sedaris From Dress Your Family in Cordu Hangs a Picture - Jerome K Jerome	roy a	nd D	enim	L			
UNIT	'-III	SHORT S	STORIES				6-	+3+0=	=9	
3.1 3.2 3.3	The How The	Faltering Pe I Taught m Gold Frame	endulum- Bhabani Bhattacharya ny Grandmother to Read - Sudha Murthy e- R.K. Laxman							
UNIT	-IV	LANGUA	GE COMPETENCY				6-	+3+0=	=9	
4.1	Voca	bulary : Syı	nonyms, Antonyms, Word Formation							
4.2	App	ropriate use	of Articles and Parts of Speech							
4.3	Erro	r correction								
UNIT - V ENGLISH FOR WORKPLACE									0=9	
5.1 Self - introduction, Greetings										
5.2	Intro	ducing othe	ers							
5.3	Liste	ening for Ge	eneral and Specific Information							
5.4	Liste	ening to and	Giving Instructions / Directions							
			L=30 / T=15]	otal	Hoi	irs	45	,	

Tutorial Activities

- 1) Reading and understanding incomplete texts
- 2) Summarize a piece of prose or poetry
- 3) Communication Practice
- 4) Role play

Text books

- Hogan, Sharon. The Art of Civilized Conversation: A Guide to Expressing Yourself with Style and Grace -Margaret Shepherd, Penny Carter, (Illustrator), 2015.
- Kumar, Vijay T. English in Use A Textbook For College Students (English ,Paper back, K Durga Bhavani, YL Srinivas,2015
- Murthy, Sudha. *How I taught my Grandmother to Read and other Stories*. Penguin Books, India, 2014
- Swan, Michael. Practical English Usage 4th Edition By, 2018

CO	URSE NA	ME	Algebra	& Trigon	ometry	netry L T P						
CO	URSE CO	DE		XMT103		3	1	0	4			
С	Р	Α				L	Т	Р	Н			
4	0	0				3	1	0	4			
PREREQUISITE Number systems												
On successful completion of this course, the students will be able to:												
		CO	URSE OUTCOME	S		DOMA	IN	LEV	EL			
CO 1	Utilize H	orner's M	ethod to obtain the	roots of pol	ynomials	Cognitiv	ve	Apply	ing			
CO 2	Find the	e summatic s	ion of the given garithmic series	series suc	h as binomial,	Cognitiv	ve	Rememt	bering			
CO 3	Utilize C matrix ar	ayley-Har nd inverse	nilton theorem to fir of a given matrix	nd powers o	f a given square	Cognitiv	ve	Apply	ing			
CO 4	Find the	expansior	of trigonometric ra	tios in term	s of θ	Cognitiv	ve i	Rememb	bering			
CO 5	Explain	the relatio	n between circular a	nd hyperbo	lic functions	Cognitiv	ve 1	Understa	erstanding			
UNIT 1								9+	3			
Reciproc	al Equation	ns - Stand	ard form – Increasi	ng or decre	asing the roots of	f a given e	quation	n – Rem	oval of			
terms. Ar	proximate	e solutions	of roots of polynon	nials by Ho	rner's method – r	elated prob	olems.					
UNIT 2	I		1 2	2		I		9 +	3			
Summati	on of Ser	ies: Binor	nial– Exponential	–Logari	thmic series (T	heorems	witho	ut pro	of) –			
Approxin	nations – r	elated pro	blems.	U U	× ×			1				
UNIT 3								9 +	- 3			
Character	ristic equa	tion – Eig	en values and Eige	n Vectors -	Similar matrices	s - Cayley	– Han	nilton Tł	neorem			
(Statemer	nt only) - l	Finding po	wers of square mat	rix, Inverse	of a square matr	ix up to or	der 3, I	Diagonal	ization			
of square	matrices	 related p 	roblems.									
UNIT 4								9+	3			
Expansio sin ⁿ θ, cos	ns of sinn(s ^m θsin ⁿ θ —Ι	θ, cosnθ in Expansion	powers of sin θ , cos s of tan $(\theta_1 + \theta_2 +,, +$	θ - Expansi θ _n)-Expans	on of $tann\theta$ intervious of $sin\theta$, $cos\theta$	ns of tan $θ$ and tan $θ$, Expai in term	s of θ -	cos ⁿ θ, related			
UNIT 5								9+	3			
Hyperboli	ic function	ns – Rela	tion between circul	ar and hyp	erbolic functions	-Inverse ł	yperbo	lic func	tions,			
Logarith	m of comp	lex quanti	ties, - related proble	ems.			• 1		-			
LEC	ΓURE	45	TUTORIAL	15	PRACTICAL	0	ΤΟΤ	AL	60			
Text Boo	ok	1										
1. Mather Unit I - 1 Unit II - 2 Unit III - Unit IV -	1. Mathematics, Volume - I and II, P. Kandasamy, K. Thilagavathy, S.Chand Publication, 1 st Edition, 2004. Unit I - 1 [Vol-I], 21-23, 36-43, 65-70 Unit II - 2, 3, 4 [Vol-I], 71-100 Unit III - 4 [Vol-II], 59-96 Unit IV - 6 [Vol-I], 122-141											

Unit V -7 [Vol-I], 143-155, 1 [Vol-II], 242-247. References

- 1. Algebra and Trigonometry, J. Stewart, L. Redlin, and S. Watson, Cengage Learning, 2012.
- 2. Calculus and Analytical Geometry, G.B. Thomas and R. L. Finny, PearsonPublication, 9th Edition, 2010.

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https://nptel.ac.in

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	3	3	2	0	1	3	3	3	3	3	0
CO 2	2	1	0	0	0	1	1	1	2	1	0
CO 3	3	3	2	0	1	3	3	3	3	3	0
CO 4	2	1	0	0	0	1	1	1	2	1	0
CO 5	3	2	1	0	0	2	2	2	3	2	0
TOTAL	13	10	5	0	2	10	10	10	13	10	0
SCALED VALUE	3	3	1	0	1	2	2	2	3	2	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1-5→1, 6-10→2, 11-	15→3										

CO	URSE NA	ME	Diffe	rential Ca	lculus	L	С						
CO	URSE CO	DE		XMT104		3	1	0	4				
С	Р	А				L	Т	Р	Η				
4	0	0				3	1	0	4				
PREREQUISITE Basic differentiation formula													
On succe	On successful completion of this course, the students will be able to:												
COURSE OUTCOMES DOMAIN LEVI													
CO1 Utilize Leibnitz formula to find n th derivative of a given function. Cognitive Apple													
CO 2	Identify	the partial	derivatives of the g	iven functi	ons.	Cognitiv	ve	Apply	ing				
CO 3	Utilize L	agrange's	method to find the	e maxima	and minima of a	Cognitiv	ve	Apply	ing				
CO 4	Identify	of two var the envelo	pe of various famil	y of curves	3.	Cognitiv	ve	Apply	ing				
CO 5	Identify	evolute of	a given family of o	urves.		Cognitiv	ve	Apply	ing				
UNIT 1								9+	3				
Introduct Trigonon derivative	Introduction (Review of basic concepts) – The n th derivative – Standard results – Fractional expressions – Trigonometrical transformation – Formation of equations involving derivatives – Leibnitz formula for the n th derivative of a product												
UNIT 2								9 +	3				
Partial de	rivatives -	Successiv	e partial derivative	s – Functio	on of function rule	– Total di	fferentia	l coeffi	cient –				
UNIT 3								9+	3				
Homoger of two va	neous func riables – L	tions – Par Lagrange's	tialderivatives of a method of undeter	function o mined mul	f two functions – N tipliers.	Aaxima an	d minin	na of fui	nctions				
UNIT 4		0 0			*			9+	3				
Method of in the part	of finding e ameter.	nvelope –	Another definition	of envelop	e- Envelope of fam	ily of curv	es whicl	h are qu	adratic				
UNIT 5								9+	3				
Definition curvature	n of Curva in polar co	ature – Ci o- ordinate	ircle, Radius and (Centre of (Curvature – Evolu	tes and Ir	volutes	– Rad	ius of				
LECTURE45TUTORIAL15PRACTICAL0TOTAL60													
Text Boo	ok	1	I	1	11		<u> </u>	<u> </u>					
 Calculus Volume I, S. Narayanan and T.K. Manicavachagom Pillay, S. Viswanathan Pvt. Ltd., 2014. Unit I - Chapter III All sections (Pages 69 to 87) Unit II - Chapter VIII Sections: 1.1 to 1.5 (Pages 178 to 191) Unit III - Chapter VIII Sections: 1.6 to 1.7,4 & 5 (Pages 191 to 204,222 to 2347) Unit IV- Chapter IV Sections: 1.1 to 1.4, (Pages 281 to 291) Unit V- Chapter V Sections :2.1 to 2.3& 2.5 (Pages 291 to 301,309 to 312) 													

References

- 1. Calculus, H. Anton, I. Birens and S. Davis, John Wiley and Sons, Inc., 2002.
- 2. Calculus, G.B. Thomas and R.L. Finney, Pearson Education, 2010.
- 3. Calculus, M.J. Strauss, G.L. Bradley and K. J. Smith, 3rd Ed., Dorling Kindersley (India) P. Ltd. (Pearson Education), Delhi, 2007.
- 4. Introduction to Calculus and Analysis (Volumes I & II), R. Courant and F. John, Springer- Verlag, New York, Inc., 1989.
- 5. Calculus, Volumes I and II, T. Apostol.
- 6. Calculus and mathematical analysis, S. Goldberg,

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- 1. https://nptel.ac.in
- 2. https://www.math.columbia.edu/programs-math/undergraduate-program/ [Columbia University]
- 3. <u>https://www.math.harvard.edu/undergraduate/?courseid=63/(Hardvard University)</u>

COs VS POs													
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2		
CO 1	3	3	2	0	1	3	3	3	3	3	0		
CO 2	3	3	2	0	1	3	3	3	3	3	0		
CO 3	3	3	2	0	1	3	3	3	3	3	0		
CO 4	3	3	2	0	1	3	3	3	3	3	0		
CO 5	3	3	2	0	1	3	3	3	3	3	0		
TOTAL	15	15	10	0	5	15	15	15	15	15	0		
SCALED VALUE	SCALED VALUE 3 3 2 0 1 3 3 3 3 0												
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation													
$1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-$	15→3												

COU	RSE C	ODE	COURSE NAME	L	Τ	Р	С				
XPG	105			3	0	0	3				
С	P	Α	ALLIED PHYSICS – I	L	Т	Р	Н				
2.7	0	0.3		3	1	0 4					
COU	RSE O	UTCO	MES : At the end of the course, the student will be ab	le to	1		1				
OBJ be he	ECTIV	ES : To r studen	impart basic principles of Physics that which would ts who have taken programmes other than Physics.	DOMA	AIN	LEV	EL				
CO1	Ex stu ma me	<i>plain</i> ty dy of va themati dical fie	pes of motion and extend their knowledge in the prious dynamic motions analyze and demonstrate cally. <i>Relate</i> theory with practical applications in eld.	demonstrate pplications in Cognitive Rem							
CO2	Ex ap	p <i>lain</i> th ply it to	eir knowledge of understanding about materials and various situations in laboratory and real life.	Cognit	ive	Understand apply					
CO3	Ca en	<i>mprehe</i> tropy an	<i>nd</i> basic concept of thermodynamics concept of d <i>interpret</i> the process of flow temperature.	Cognit	ive	Reme under	ember rstand				
CO4	Ar caj the	Articulatethe knowledge about electric current resistance, capacitance in terms of potential electric field and analyze them mathematically verify circuits.CognitiveU A									
CO5	In log ace	Interpretthe real life solutions using AND, OR, NOT basic logic gates and Infer operations using Boolean algebra and acquire elementary ideas of IC circuits.CognitiveRement analyze									

UNIT – I	WAVES, OSCILLATIONS AND ULTRASONICS	9+3					
Simple harmonic motion (SHM) – composition of two SHMs at right angles (periods in the ratio 1:1) – Lissajous figures – uses – laws of transverse vibrations of strings – determination of AC frequency using sonometer (steel and brass wires) – ultrasound – production – piezoelectric methor – application of ultrasonics: medical field – lithotripsy, ultrasonography – ultrasonic imaging-ultrasonics in dentistry – physiotheraphy, opthalmology – advantages of noninvasive surgery – ultrasonics in green chemistry							
UNIT – II	PROPERTIES OF MATTER	9+3					
<i>Elasticity</i> : elastic constants – bending of beam – theory of non- uniform bending – determination of Young's modulus by non-uniform bending – energy stored in a stretched wire – torsion of a wire –							

Young's modulus by non-uniform bending – energy stored in a stretched wire – torsion of a wire – determination of rigidity modulus by torsional pendulum

Viscosity: streamline and turbulent motion – critical velocity – coefficient of viscosity – Poiseuille's formula – comparison of viscosities – burette method,

Surface tension: definition – molecular theory – droplets formation–shape, size and lifetime – COVID transmission through droplets, saliva – drop weight method – interfacial surface tension.

UNIT – III HEAT AND THERMODYNAMICS

9+3

: Joule-Kelvin effect – Joule-Thomson porous plug experiment – theory – temperature of inversion – liquefaction of Oxygen– Linde's process of liquefaction of air– liquid Oxygen for medical purpose– importance of cryocoolers – thermodynamic system – thermodynamic equilibrium – laws of thermodynamics – heat engine – Carnot's cycle – efficiency – entropy – change of entropy in reversible and irreversible process.

UNIT – IV ELECTRICITY AND MAGNETISM

Potentiometer – principle – measurement of thermo emf using potentiometer –magnetic field due to a current carrying conductor – Biot-Savart's law – field along the axis of the coil carrying current – peak, average and RMS values of ac current and voltage – power factor and current values in an AC circuit – types of switches in household and factories– Smart wifi switches- fuses and circuit breakers in houses.

UNIT – V DIGITAL ELECTRONICS AND DIGITAL INDIA

9+3

9 + 3

Logic gates, OR, AND, NOT, NAND, NOR, EXOR logic gates – universal building blocks – Boolean algebra – De Morgan's theorem – verification – overview of Government initiatives: software technological parks under MeitY, NIELIT- semiconductor laboratories under Dept. of Space – an introduction to Digital India.

HOURS	LECTURE	TUTORIAL	TOTAL
	45	15	60

TEXT BOOKS

- 1. Murugeshan R, "Properties of Matter For B. Sc. Students", S Chand & Company Limited, Mohan Co-Operative Industrial Estate, New Delhi - 110 044, First edition 1994, Reprint 2022.
- R. Murugeshan, Er. Kiruthiga Siva Prasath, "Properties of Matter and Acoustics", S.Chand & Company Ltd, Ram Nagar, New Delhi - 110 055, First edition 2005, Second Edition 2012.
- 3. Brijlal and N.Subramanyam (1994), Waves and Oscillations, Vikas Publishing House, New Delhi
- 4. V.K.Metha(2004). Principles of electronics 6th Edn. S. Chand and company.
- J.B.Rajam and C.L.Arora (1976). Heat and Thermodynamics (8th edition), S.Chand&Co.,New Delhi.

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- 1. DS Mathur, "Elements of Properties of Matter", S. Chand Limited, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi 110 055, First edition 1949, Reprint 2016.
- **2.** Brij Lal, N Subrahmanyam, "*A Textbook of Sound*" 2nd Edition, Vikas Publishing House Pvt. Ltd.A–27, 2nd Floor, Mohan Co–operative Industrial Estate, New Delhi–110044, 2018.
- **3.** ResnickHallidayandWalker(2018).FundamentalsofPhysics(11thedition),JohnWilleyand Sons, Asia Pvt.Ltd., Singapore.
- 4. R. Murugesan (2001), Allied Physics, S. Chand & Co, New Delhi
- V.R. Khannaand R.S. Bedi (1998), Text book of Sound 1stEdn. Kedharnaath Publish &Co, Meerut.
- N.S. Khare and S.S.Srivastava (1983), Electricity and Magnetism10thEdn., Atma Ram &Sons, New Delhi

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- 1. https://youtu.be/M_5KYncYNyc
- 2. https://youtu.be/ljJLJgIvaHY
- 3. https://youtu.be/7mGqd9HQ_AU
- 4. https://youtu.be/h5jOAw57OXM
- 5. https://learningtechnologyofficial.com/category/fluid-mechanics-lab/
- 6. http://hyperphysics.phy-astr.gsu.edu/hbase/permot2.html
- 7. https://www.youtube.com/watch?v=gT8Nth9NWPM
- 8. https://www.youtube.com/watch?v=9mXOMzUruMQ&t=1s
- 9. https://www.youtube.com/watch?v=m4u-SuaSu1s&t=3s
- 10. https://www.biolinscientific.com/blog/what-are-surfactants-and-how-do-they-work

Course Outcomes	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO9	PO10	PSO1	PSO2
CO ₁	3	0	1	0	1	3	1	2	1	2	2	1
CO ₂	2	0	1	2	1	3	1	1	1	2	2	1
CO ₃	2	1	3	3	1	3	2	1	0	2	1	1
CO ₄	1	1	2	3	2	3	1	2	0	2	2	2
CO ₅	2	1	1	3	1	3	1	2	1	2	1	1
Total	10	3	8	11	6	15	6	8	3	10	8	6
Scaled to 1, 2, 3	2	1	2	3	2	3	3	2	1	2	2	2

Mapping with Programme Outcomes

0 - No relation 1 - Low relation 2 - Medium relation

3 – High relation

COU	URSE CO	DE	COURSE NAME	L	Т	P	С	
XPC	G106			0	0	1	1	
С	Р	Α	ALLIED PHYSICS PRACTICAL – I	L	L T		Н	
0	0.75	0.25		0	0	2	2	
	I	I			1		1	
COU On t	JRSE OU	TCOME sful comp	S letion of this course students would able to	Dom	ain	Level		
CO1	CO1 <i>Develop Knowledge</i> on bending of beams, its properties and <i>application</i> Psychomotor							
CO2	O2 <i>Identify</i> the principles of elasticity, <i>derive</i> expression for twisting couple and <i>determine</i> rigidity modulus of a wire. Affective:							
CO3	. Und appli	lerstand j cations a	<i>low</i> of liquid, viscosity and <i>identify</i> its <i>ind Define surface tension</i>	Psych : Affec	omotor tive:	Apply Mechanism Receive		
CO4	the ca	Psychomotor : Affective: Receive						
CO5	. Una appli	lerstand l cations	basic concepts of gates and <i>identify</i> its	Psych : Affe	omotor ective:	Analyze Mechanism Receive		

Ex. No	Experiments (Any eight experiments)	Cos
1.	Young's modulus by non-uniform bending using pin and microscope	CO2
2.	Young's modulus by non-uniform bending using optic lever, scale and telescope	CO2
3.	Rigidity modulus by static torsion method.	CO1
4.	Rigidity modulus by torsional oscillations without mass	CO1
5.	Surface tension and interfacial Surface tension – drop weight method	CO3
6.	Comparison of viscosities of two liquids – burette method	CO3
7.	Specific heat capacity of a liquid – half time correction	CO3

8.	Verification of laws of transverse vibrations using sonometer						
9.	Calibration of low range voltmeter using potentiometer						
10.	Determination of thermo emf using potentiometer						
11	Verification of De Morgan's theorems using	g logic gate ICs.		CO5			
12	Use of NAND as universal building block.			CO5			
		LECTURE	PRACTICAL	TOTAL			
HOURS		0	30	30			

HOURS

TEXT BOOKS

1. C. L. Arora, "B.Sc .Practical Physics", S. Chand & Company Ltd. Ram Nagar, New Delhi–110055. 2007.

2. R. K. Shukla & Anchal Srivastava. "Practical Physics," New Age International (P) Ltd, Publishers, (Formerly Wiley Eastern Limited), 4835/24, Ansari Raod, Daryagani, New Delhi–11002. 2006.

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1. Geeta Sanon, "B. Sc., Practical Physics", 1st Edition, S. Chand and Company, 2007.

2. Chattopadhyay, D., Rakshit, P. C. and Saha, B., "An Advanced Course in Practical Physics," 8th Edition, Books & Allied Ltd., Calcutta, 2007.

3. G. L. Squires, "Practical Physics", Fourth edition, Cambridge University Press, 2001.

4. Indu Prakash and Ramakrishna, "A Text Book of Practical Physics," 11th Edition, Kitab Mahal, New Delhi, 2011.

5. C. Ouseph,K. Rangarajan, "A Text Book of Practical Physics", Volume I,II, S.Viswanathan Publishers, 1997.

E-Resources:

1. Amal Kumar Das, Department of Physics, IIT Kanpur, "Introduction to Electromagnetic Theory", National Programme on Technology Enhanced Learning (NPTEL), https://onlinecourses.nptel.ac.in/noc20 ph16/preview

Course	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO9	PO10	PSO1	PSO2
Outcomes												
CO ₁	1	1	3	3	2	3	1	3	0	1	2	1
CO ₂	1	1	3	2	1	3	1	3	1	1	2	1
CO ₃	1	1	3	3	1	3	2	3	1	2	2	1
CO ₄	1	1	2	2	2	3	1	3	1	2	2	1
CO ₅	1	1	3	3	2	3	1	3	1	2	2	1
Total	5	5	14	13	8	15	6	15	4	8	10	5
Scaled to 1, 2, 3	1	1	3	3	2	3	2	3	1	2	2	1
0 - No relation rel	ation	1 - Low	v relatio	n	2 – M	ledium 1	relation		3 – High	relation		

Mapping of COs with POs

CO	URSE NA	ME		Found	ation Co	ourse	L	Т	C	
CO	URSE CC	DDE		Х	MT107		1	1	2	
С	Р	Α					L	Т	Р	Н
2	0	0					1	1	0	2
PRERE	QUISITE		Nu	mber systems & A	Algebra			I		
On succ	essful com	pletion of	f this	course, the stud	lents will	be able to:				
		CO	URS	E OUTCOMES			DOMAI	N	LEV	EL
CO 1	CO1Find a general term and middle tern in a binomial expansion using binomial theorem.CognitiveRemembering									
CO 2	Find the using the	number of fundamer	of po ntal c	ossible combinati counting principle	ons for a	given situation	Cognitiv	re I	Rememb	bering
CO 3	Find the	combinati	ions (of objects with re	petitions		Cognitiv	re I	Rememb	ering
CO4Find the 6 trigonometric functions using a calculator, as well as determining exact values for some special angles without aCognitiveRemembering									pering	
CO 5	Find der	ivatives of	fthe	given composite	functions	5.	Cognitiv	re I	Rememb	ering
UNIT 1										3+3
Binomia	theorem,	General te	erm, 1	middle term, prob	olems bas	sed on these conce	epts.			
UNIT 2		1 0								3+3
Fundame	ntal princi	ple of cou	nting	g. Factorial n.						<u></u>
UNIT 3	n offormer	1		ann actions sime		tiona combination		atitions		<u>3+3</u>
within or	ouns form	nation of g		s	e applica	tions, comomation	is with tep	entions	, arrange	ements
UNIT 4		lation of 5	Joup	5.						3+3
Introduct	ion to trig	gonometric	c rati	ios, proof of sin	(A+B), o	cos(A+B), tan(A+	B) formul	ae, mu	ltiple a	nd sub
multiple	angles, si	n(2A), co	s(2A), tan(2A) etc.,	transform	nations sum into	product a	nd pro	duct int	o sum
formulae	, inverse ti	rigonometi	ric fu	nctions, sine rule	and cosi	ine rule.				
UNIT 5				1.1 1:00		2				3+3
Limits, s	tandard for	ormulae a	nd p	oroblems, differe	entiation,	first principle, u	iv rule, u/	v rule,	metho	ds of
LECTURE 15 TUTORIAL 15 PRACTICAL 0 TOTAL 30										
					10		Ŷ	1011		•••
Text Boo)K									
1. NC	ERT class	XI and X	II tex	t books	1	1				
2. An	y State Boa	ard Mathe	matic	es text books of c	lass XI a	nd XII current Ed	ition			
Any Stor	:es te Board M	lathematic	ne tav	t books of class	VI and V	II. Old Edition				
E-Refere	ences			1 000K5 01 Class 2						

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	COs Vs POs										
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	2	1	0	0	0	1	1	1	2	1	0
CO 2	2	1	0	0	0	1	1	1	2	1	0
CO 3	2	1	0	0	0	1	1	1	2	1	0
CO 4	2	1	0	0	0	1	1	1	2	1	0
CO 5	2	1	0	0	0	1	1	1	2	1	0
TOTAL	10	5	0	0	0	5	5	5	10	5	0
SCALED VALUE	2	1	0	0	0	1	1	1	2	1	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1-5→1, 6-10→2, 11-15→3											

COUR	SE CODE	XUM001			L	Τ	P	SS	С		
COUR	1	0	0	1	1						
PRER	EQUISITES	L	Т	P	SS	H					
C:P:A		0.8:0.1:0.1			1	0	0	1	2		
COUR	SE OUTCON	IES		Domain	Le	Level					
CO1	Re Ui	emen nders	ıber, tand								
CO2	<i>Explain</i> and against wom	<i>Apply</i> gender issues, equality	y and violence	Cognitive	Uı Aı	nders oply	tand,				
CO3	<i>Classify</i> and challenges	<i>Develop</i> the identify of wom	nen issues and	Cognitive & Affective	Ai Re	nalyz ceive	e e				
CO4	<i>Classify</i> and violations.	d Dissect human rights a	nd report on	Cognitive	Uı	nders	tand,	Analy	yze		
CO5	<i>List</i> and brotherhood, and good gov	respond to family valu fight against corruption by vernance.	es, universal common man	Cognitive & Affective	Re	emerr	ıber,	Respo	ond		
UNIT	HUN	IAN ETHICS AND VALU	ES					3+3	3		
Human and Cor Persona	Ethics and va urage, Time M ality Developn	lues - Family and Society, So anagement, Co-operation, Co nent	ocial service, So ommitment, Syn	cial Justice, Integrity, Ca npathy and Empathy, Sel	ring a Fresp	ind S ect, S	harir Self-C	ng, Ho Confid	nesty ence,		
UNIT I	li Gi	ENDER EQUALITY						3+3	3		
Gender Status o Dr.B.R	Discrimination of Women in . Ambethkar, 7	on in society and in family, (India in Education, Health, I Fhanthai Periyar and Phule to	Gender equity, Employment, D Women Empo	equality, and empowerm efinition of HDI, GDI ar werment.	ent. S d GE	Socia EM. (l and Conti	l Econ ributio	omic ns of		
UNIT	III W	OMEN ISSUES AND CHA	LLENGES					3+3	3		
Womer Harassi Educati	n Issues and Cl ment, Traffick on, Dowry Pro	hallenges- Female Infanticide ing, Remedial Measures – Ac ohibition Act.	e and Feticide, V ets related to wo	/iolence against women, l men: Political Right, Prop	Dome	estic v Righ	viole ts, ar	nce, S nd Rig	exual hts to		
UNIT	IV HU	UMAN RIGHTS						3+3	3		
Human Rights and Duties, Universal Declaration of Human Rights (UDHR), Civil, Political, Economical, Social and Cultural Rights, Rights against torture, Forced Labour, Child helpline- Intellectual Property Rights (IPR) and its types National Policy on occupational safety and health.									l and ypes.		
UNIT Y	V GO	OD GOVERNANCE						3+3	3		
Good C corrupt environ	Bovernance - E ion on societ ment and univ	Democracy, People's Participa y and Remedial measures, versal brotherhood.	ation, Transpare Government s	ency in governance and au ystem of Redressal. Cre	idit, C ation	Corru of	ptior Peop	n, Impa ole frio	act of endly		
			LECTURE	SELF STUDY	7		7	ГОТА	L		
			15	15				30			
REFEI	REFERENCES										

- 1. Aftab A, (Ed.), Human Rights in India: Issues and Challenges, (New Delhi: Raj Publications, 2012).
- 2. Bajwa, G.S. and Bajwa, D.K. Human Rights in India: Implementation and Violations (New Delhi: D.K. Publications, 1996).
- 3. Chatrath, K. J. S., (ed.), Education for Human Rights and Democracy (Shimala: Indian Institute of Advanced Studies, 1998).
- 4. Jagadeesan. P. Marriage and Social legislations in Tamil Nadu, Chennai: Elachiapen Publications, 1990).
- 5. Kaushal, Rachna, Women and Human Rights in India (New Delhi: Kaveri Books, 2000)
- 6. Mani. V. S., Human Rights in India: An Overview (New Delhi: Institute for the World Congress on Human Rights, 1998).
- 7. Singh, B. P. Sehgal, (ed) Human Rights in India: Problems and Perspectives (New Delhi: Deep and Deep, 1999).
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- 9. Veeramani, K. (ed) Periyar Feminism, (Periyar Maniammai University, Vallam, Thanjavur: 2010).
- 10.Planning Commission report on Occupational Health and Safety http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg occup safety.p
- 11. Central Vigilance Commission (Gov. of India) website: http://cvc.nic.in/welcome.html.
- 12. Weblink of Transparency International: https://www.transparency.org/
- 13. Weblink Status report: https://www.hrw.org/world-report/2015/country-chapters/india

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1								2						
CO2								3	1					
CO3								2						
CO4								3		2				
CO5								3	2	2		2		
Total		2						13	3	4		2		
Scaled Value		1						3	1	1		1		

Table 1 : Mapping of COs with Pos

SEMESTER II

பொதுத்தமிழ் - 2 (இரண்டாம் பருவம்)

பாடக்குறிய	ኖቡ/	பாடப்பெயர்/	Cotogony	L	Т	Р	SS	н	С
Course Co	de	Course Name							
XGT201		பொதுத்தமிழ் - 2	0	0	3	3			
Pre-requisit	te	பன்னிரெண்டாம்வ	வேண்டும்.						
பாடப்பயன்	ாக								
ள் / Course		இப்பாடத்தைக் கற்	பதால் பின்வரும் பய	ன்களை	மாணவ	பர்கள் ,	அடை	வர்.	
outcomes									
		நீதி இலக்கியங்கன	ளைக் கற்பதன் மூல	ம் நீதி	நெறியின	னையும்	புரிந்	துகொ	⁻ள்ளல்
CO1		வாழ்வியல் மற்றும்	மேலாண்மைச் சிந்த	னைகன	ளயும் ெ	தரிந்து	(Uno	derstar	nd)
		பின்பற்றுவர்							
<u> </u>		சிற்றிலக்கியங்களின்	ள்வழி இலக்கியச் சு	வையின	னயும்		புரிந்	துகொ	⁻ள்ளல்
002		பண்பாட்டு அறிவில	னையும் பெறுவர்				(Uno	derstar	nd)
CO3		பட்டப்படிப்பினைட்	பபடிக்கும் போதே வெ	பரும்பா	ன்மைய	ான	பகுப	ப்பாய்வ	புசெய்தல்
003		தமிழ் இலக்கியங்க	ர் குறித்த அறிவினை	ப் பெறு	வர்		Analyze		
CO4		தமிழ்ச்சமூகப் பண்ட	பாட்டு வரலாற்றினை	ர இலக்ச	பெங்கள்	-	தெரி	ிந்துசெ	காள்ளல்
004		வாயிலாக அறிவர்					(App	oly)	
		போட்டித் தேர்வ	_l களில் வெற்றிடெ	பறுவதற்	குத்	தமிழ்ப்	புரிந்	துகொ	⊤ள்ளல்
CO5		பாடத்தினைப் பய	ப <mark>ன்</mark> கொள்ளும் வ <mark>ை</mark>	கயில்	ஏற்ற	பயிற்சி	(Uno	derstar	nd)
		பெறுவர்							
		K1- Remember; K2	– Understand; K3 –	Apply; k	(4 Analy	ze; K5			
		Evaluate; K6 – Crea	ate.						
அலகு - I		நீதிஇலக்கியம் 9மணிகள்							
	திரு	நக்குறளில் வாழ்வியல் – திருக்குறளில் மேலாண்மைச்							
	சிந்த	5னைகள்							
அலகு - II			பிறஇலக்கியங்கள்				9மன	னிகள்	

	வள்ளலார் – அருள் விளக்க மாலை (முதல் 10 பாடல்கள்) –	
	எச்.ஏ.கிருட்டிணப்பிள்ளை – இரட்சணிய மனோகரம் – பால்ய	
	பிரார்த்தனை – குணங்குடிமஸ்தான் சாகிபு – பராபரக் கண்ணி	
	(முதல் 10 கண்ணி)	
அலகு - III	சிற்றிலக்கியங்கள்	9மணிகள்
	தமிழ்விடு தூது (முதல் 20 கண்ணி) – திருக்குற்றாலக் குறவஞ்சி –	
	குறத்தி மலைவளம் கூறல் – முக்கூடல் பள்ளு – நாட்டுவளம்	
அலகு -IV	இலக்கியவரலாறு	9மணிகள்
	பாடம் தழுவிய இலக்கிய வரலாறு (பல்லவர் காலம், நாயக்கர் காலம்)	
அலகு - V	மொழித் திறன்/ போட்டித் தேர்வுத் திறன்	9மணிகள்
	1. தொடர் வகைகள்	
	2. மரபுத்தொடர், பழமொழிகள்	
	3. பிறமொழிச் சொற்களைக் களைதல்	
	4. வழுச்சொற்கள் நீக்குதல்	
	5. இலக்கணக் குறிப்பு அறிதல்	
	(குறிப்பு : அலகு 4, 5 ஆகிய பகுதிகள் போட்டித் தேர்வு நோக்கில்	45 மணிகள்
	நடத்தப்பட வேண்டும்)	
பாடநூல்க	ວ່າ	
1.	திருக்குறள், மணிவாசகர் பதிப்பகம், சென்னை	
2.	இலக்கியத்தல் மனித வள மேம்பாடு, சி. சரவண ஜோதி, பாவை பப்	ளிகேசன்ஸ்,
3.	தமிழ் விடுதூது	
4.	திருக்குற்றாலக் குறவஞ்சி	
5.	எச்.ஏ.கிருட்டிணப்பிள்ளை – இரட்சணியமனோகரம்	
பார்வைநூ	ல்கள்	
1.	தமிழ்இலக்கிய வரலாறு – சிற்பிபாலசுப்பிரமணியன்.	

2.	புதியநோக்கில் தமிழ்இலக்கிய வரலாறு - தமிழண்ணல்	
3.	வகைமைநோக்கில் தமிழ்இலக்கிய வரலாறு – எஃப்.பாக்கியமேரி.	

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]
Web Sources
Tamil Heritage Foundation - www.tamilheritage.org <http: www.tamilheritage.org=""></http:>
Tamil virtual University Library - www.tamilvu.org/library http://www.virtualvu.org/library
Project Madurai - www.projectmadurai.org.
• Chennai Library - www.chennailibrary.com <http: www.chennailibrary.com="">.</http:>
• Tamil Universal Digital Library-www.ulib.prg <http: www.ulib.prg="">.</http:>
Tamil E-Books Downloads – tamilebooksdownloads.blogspot.com
Tamil Books online - books.tamilcube.com
Catalogue of the Tamil books in the Library of British Congress archive.org
Tamil novels online - books.tamilcube.com
Strong-3, Medium-2, Low-1

COU	RSE CODE	XGE202	L	Т	Р	SS	Н	C
COU	RSENAME	ENGLISH II	2	1	0	0	3	3
C:P:A	A- 3:0:0							
COU	RSE OUTCO	AES:	De	omai	n	L	evel	
After	the completio	n of course, the learners will be able to get						
comp	rehensive skill	s like:						
CO1	<i>Learn</i> to in	roduce themselves and talk about	Co	gniti	ve	Une	lersta	ind
~~~	everyday ac	tivities confidently						
Able to write short paragraphs on people, places and events Cognitive A								
CO3 <i>Identify</i> the purpose of using various tenses and effectively Cognitive Under								
employ them in speaking and writing								
CO4	Gain know	edge to write subjective and objective	Co	gniti	ve	Und	lersta	ind
CO5	Identify on	use their skills effectively in formal		aniti	10	Und	orstor	nd
	contexts	use men skins enectively in format		ginu		Ullu	cistai	liu
SYLL	ABUS						HOU	RS
UNIT	-I POETR	Y				6-	-3+0=	=9
1.1	Very Indian Po	em in Indian English - Nissim Ezekiel						
1.2	Still I Rise - N	laya Angelou						
1.3	The Flower -7	ennyson						
1.4	On Killing a 7	ree - Gieve Patel						
UNIT	-II PROSE					6-	-3+0=	=9
2.1	If You Are W	ong Admit it- Dale Carnegie						
2.2	Kindly Adjust	Please - Shashi Tharoor						
2.3	The Spoon-fe	l Age- W.R. Inge						
UNIT	-III FICTIO	N				6-	-3+0=	=9
	Alchemist - P	ulo Coelho						
UNIT	-IV LANGU	AGE COMPETENCY				64	-3+0=	=9
4.1	Homonyms, H	lomophones, Homographs						
Po	ortmanteau wor	ds						
4.2	Verbs and Ter	ses, Subject Verb Agreement						
4.3	Error correction	on						
UNIT	- V ENGLI	SH FOR WORKPLACE				(	5+3+(	0=9
5.1 Reading for General and Specific Information [charts, tables, schedules, graphs etc]								
5.2 Reading news and weather reports								
5.3	Writing parag	aphs						
5.4	Taking and m	aking notes		-				
		L=30 / T=15	[	otal	Hou	irs	45	•
Tutori	al Activities	1 4 11 1 1 4 4						
5)	Reading and u	iderstanding incomplete texts						
$\begin{pmatrix} 6 \end{pmatrix}$	Summarize a p	nece of prose or poetry						
	Role play							

#### Textbooks

- Coelho, Paulo. The Alchemist. Harper ,2016
- Chambers, Pearson. Brilliant Speed Reading: Whatever you need to read, however ... Phil, 2013
- Hewings, Martin. Advanced English Grammar. Cambridge University Press, 2000
- Sharma, Richa Descriptive English. Arihant Publications (India) Ltd, 2019

#### E- Resources:

- Very Indian poem by Nissim Ezekiel
- http://econtent.in/pacc.in/admin/contents/40_%20_2020103001102714.pdf
- Still I Rise by Maya Angelou https://www.poetryfoundation.org/poems/46446/stilli-rise
- Kindly Adjust please Shashi Tharoor
- https://www.theweek.in/columns/shashi-tharoor/2018/05/25/kindly-adjust-to-ourenglish.html?fbclid=IwAR3IhtdXqvuV4ySECn9S7SA6HmCEYISyd1QHd3BlwKg iNKKwdkeSg3qWp-U/
- The Alchemist: https://www.youtube.com/watch?v=lxBYpmxjeDU

CO	URSE NA	ME	Analytical Geometry 3-D and Integral	L	T	P	C				
CO		DE	Calculus VMT202	<b>3 1 0</b>							
	UKSE UU	DE	AIVI1203	5	1	U	4				
С	Р	Α		L	T	P	H				
4	0	0		3	1	0	4				
PREREC	QUISITE		2D and 3D Shapes & Basic Integration Formul	ae	1						
On succe	essful com	pletion of	this course, the students will be able to:								
		CO	URSE OUTCOMES	DOMAI	N	LEV	EL				
CO 1	Find the	equation t	angent plane to a given sphere.	Cognitiv	/e	Remem	bering				
CO 2	Find the	equation t	angent plane to a given cone and cylinder.	Cognitiv	/e	Remem	bering				
CO 3	Apply th for a give	e propertie en integral	s of definite integral to find reduction formulae	Cognitiv	7e	Appl	ying				
<b>CO 4</b>	Examine find recu	e the relation the render the render the relation to the relationt to the rel	on between beta and gamma function and also gamma function.	Cognitiv	/e	Analy	zing				
CO 5	Utilize the bounded	ne change region.	of order of integration to obtain area the given	Cognitiv	7e	Appl	ying				
UNIT 1						9 ·	+ 3				
Sphere- 7	fangent pla	ane- inters	ection of two spheres – Equation of tangent plar	ne to a sphe	ere.						
UNIT 2						9	+ 3				
The equa	ation of su	urface – c	one- Right Circular Cone- Tangent plane and	normal –	Cylind	ler- Env	eloping				
Cylinder.						0.	L 3				
Propertie	s of defin	nite integ	als - Reduction formulae of the types:			9	- 3				
$\int x^n e^{-1}$	$e^{ax}dx, \int x$	ⁿ e ^{ax} cosa	$xdx$ , $\int sin^n xdx$ , $\int cos^n xdx$ , $\int sin^m xcos^n x$	$dx, \int tan^n$	^ı xdx.						
UNIT 4			- · <b>v</b> · <b>v</b> · <b>v</b>	<b>v</b>		9.	+ 3				
Beta and	Gamma F	Functions:	Definitions – Convergence of $\Gamma(n)$ – Recurrence	e formula	of gar	mma fui	nction –				
Propertie	<u>s of beta f</u>	unction $-1$	elation between beta and gamma functions.								
UNIT 5						. 9	+ 3				
Multiple	integral: L	Double inte	egral – Evaluation of double integral - change	of order o	t integ	gration -	- Polar				
coordina LEC	coordinates - I riple integrals - Application of multiple integrals.										
	IUKE	43	TUTORIAL 15 FRACTICAL	U	101	AL	00				
Text Boo	ok										
<ol> <li>Anal Unit I - C Unit II - C</li> <li>Calcu Unit III - Unit IV- Unit V- C</li> </ol>	ytical Geo Chapter 4 Chapter 5 Ilus Vol II Chapter 1 Chapter 7 Chapter 5	metry Part Sec: 1 – Sec: 1 – T.K. M. I Sec: 11, Sec: 2 – Sec: 2 –	: II – Three Dimensions: T.K. M. Pillai, 2015 (fo 8 (pages:92 -111) 8 (pages :115-139) Pillai, 2015 (for Unit III, IV & V) 13.1 – 13.6 (pages: 66-72,79-88) 5 (pages 278-290) - 5.4(pages 203-231)	or Unit I, II							

#### References

1. Analytical Geometry and Vector Calculus, S. Arumugam and Issac, New Gamma, 2008.

2. Engineering Mathematics, Dr. M.K. Venkatraman, National Publishing Company.

3. Ancillary Mathematics, T.K. M. Pillai, P. Natarajan, S. Viswanathan (Printers & Publishers) Pvt Ltd. 1992.

#### **E-References**

- 1. <u>https://sites.math.washington.edu/~m125/</u> [Washington University]
- 2. <u>https://courses.maths.ox.ac.uk/node/28</u> [Oxford University]

COs VS POs												
	<b>PO 1</b>	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	2	1	0	0	0	1	1	1	2	1	0	
CO 2	2	1	0	0	0	1	1	1	2	1	0	
CO 3	3	3	2	0	1	3	3	3	3	3	0	
CO 4	3	3	3	1	2	3	3	3	3	3	1	
CO 5	3	3	2	0	1	3	3	3	3	3	0	
TOTAL	13	11	7	1	4	11	11	11	13	11	1	
SCALED VALUE	3	3	2	1	1	3	3	3	3	3	1	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
$1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$												
COU	JRSE NA	ME		Seque	ence and S	eries	L	r		Р	C	
--------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------	-------------------------	-----------	-------------------------------	---------------	--------------------	------------	--------	---------------	---------	---------	--
CO	URSE CO	DE			XMT204		3	1		0	4	
С	Р	Α					L	ſ		Р	Н	
4	0	0					3	1		0	4	
PREREC	QUISITE		Alg	ebra and Numb	er Systems	3	1	1			I	
On succe	ssful com	pletion	of this	course, the stu	ıdents will	be able to:						
		(	COURS	E OUTCOME	<b>ES</b>		DOMA	IN		LEVE	EL	
CO 1	<b>Demonst</b> oscillatin	t <b>rate</b> if .g.	f an inf	inite sequence	is bounde	d, monotonic or	Cognit	ive	Understanding			
CO 2	Demonst	trate th	e given	series whether	it is conver	gent or divergent	Cognit	ive	Ur	Idersta	nding	
	by using	the app	propriate	tests.	convergent	or divergent by			Ur	dorsta	ndina	
CO3 Using the appropriate tests such as Raabe's test and Cauchy's root Cognitive Cognitive											nung	
CO 4	<b>Identify</b> the sequence of partial sum for a given infinite series.Cognitive											
CO 5	CO 5Demonstrate the concepts about the Weirstrass inequalities and Cauchy's inequality.CognitiveUnderstanding											
UNIT 1 9+3												
Sets, Sequence tends to a	Sets, Sequences – Aggregate: Upper and lower bounds – Bounded sequences - monotonic sequence always tends to a limit finite or infinite											
UNIT 2	,									9+	3	
Some ger	neral theor	rems co	oncernin	g infinite serie	s – series	of positive terms	– compa	rison	tests	s – Ca	uchy's	
condensat	tion test –	D-Aler	nbert's i	atio test - Defir	iition of coi	nvergence, Diverge	ence and	Oscil	latio	n- Nec	essary	
condition	for conve	rgence	- conver	gence of $\sum \frac{1}{n^p}$	and Geom	netric series.						
UNIT 3										9+	3	
Cauchy's with sime	root test a	and thei	r simple	e problems - Ra	abe's test -	- Absolutely conve	ergent ser	ies	Alte	rnative	series	
UNIT 4		115.								9+	3	
Summatio	on of serie	s – Sur	nmation	by different se	ries – recu	urring series.						
UNIT 5										9+	3	
Inequalitie	es- Geome	etric and	d Arithn	netic means - W	Veirstrass in	nequalities- Cauch	y's inequ	ality.	A <b>T</b>		(0)	
	CTURE		45	TUTORIAL	15	PRACTICAL	0	TOL	AL		60	
Text Boo	ks											
1. Algebr	a, Volume	: I, T.K.	M. Pilla	ıy, T. Natarajan	and K.S.G	anapathy, S. Visw	vanathan	(Print	ers &	& Publ	ishers)	
Pvt. Lte	Pvt. Ltd., 2015. Unit L: Chapter 2 (Sec: 4 - 7) Bages: 20 - 40											
Unit II $\cdot$ (	Chapter 2	(Sec: 4)	-16 P	20 - 40								
Unit III: 0	Chapter 2	(Sec: 1)	7 - 19, 2	21 - 24), Pages:	: 68 - 88							
Unit IV: (	Chapter 5	(Sec: 1	- 7), Pa	iges: 246 – 281	•							

2. Algebra Volume II, T.K.M. Pillay, T. Natarajan and K.S.Ganapathy, S. Viswanathan (Printers & Publishers) Pvt. Ltd., 2015.

Unit V : Chapter 4 (Sec: 1 – 12), Pages: 179 – 212.

### Reference

1. Sequence and Series: S. Arumugam and Isaac, New Gamma Publishing House – 2002 Edition **E-References** 

1. https://courses.maths.ox.ac.uk/node/43846[Oxford University]

2. https://explore course. Stanford. edu/search?q=MATH21[Stanford University]

	COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PSO1	PSO2		
CO 1	3	2	1	0	0	2	2	2	3	2	0		
CO 2	3	2	1	0	0	2	2	2	3	2	0		
CO 3	3	2	1	0	0	2	2	2	3	2	0		
CO 4	3	3	2	0	1	3	3	3	3	3	0		
CO 5	3	2	1	0	0	2	2	2	3	2	0		
TOTAL	15	11	6	0	1	11	11	11	15	11	0		
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0		
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation													
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3													

COL	JRSE (	CODE	COURSE NAME	L	Т	Р	С		
	XPG20	5		3	0	0	3		
С	Р	Α	ALLIED PHYSICS –II	L	Т	Р	Н		
2.7	0	0.3		3	1	0	4		
COU	RSE C	OUTCO	MES						
On th	e succe	essful co	mpletion of this course students would able t	0					
OBJ	ECTIV	TES : T	o understand the basic concepts of optics,	DOMA	IN	Ι	LEVEL		
mode	rn Phy	sics, co	ncepts of relativity and quantum physics,						
semio	conduct	or phys	ics, and electronics.						
		Explain	the concepts of interference diffraction						
СО	1	and <i>repl</i>	<i>trase</i> the concept of polarization based on	Cogniti	ve	Und	erstanding		
		wave pa	tterns			analyze			
		Outline	the basic foundation of different atom						
	<b>n</b>	nodels	and <i>Relate</i> the importance of interpreting	а ···		Remembering			
		mprovi	ng theoretical models based on	Cogniti	ve	und	erstanding		
		observat	10n.						
		Summa	<i>rize</i> the properties of nuclei, nuclear forces						
	2	structure	e of atomic nucleus and nuclear models.			Ren	embering,		
		Underst	and the importance of nuclear energy	Cogniti	ve	und	erstanding		
	5	safety m	easures.				apply		
		Describ	the basic concepts of relativity like			Dom	ambaring		
СО	4	equivale	nce principle, inertial frames and Lorentz	Cogniti	ve	und	erstanding		
	1	ransform	nation.	Coginti		unu	apply		
		Summar	<i>ize</i> the working of semiconductor						
CO	5 6	levices,	Zener diode, transistors and practical	Cogniti	ve	Ren	nembering		
	Ċ	levices.		understanding					

UNIT – I	OPTICS	9+3							
Interference -	- interference in thin films -colors of thin films - air wedge - determin	ation of diameter							
of a thin wi	of a thin wire by air wedge - diffraction - diffraction of light vs sound - normal incidence -								
experimental determination of wavelength using diffraction grating (no theory) - polarization -									
polarization by double reflection – Brewster's law – optical activity – application in sugar industries.									
UNIT – II	ATOMIC PHYSICS	9 + 3							
Atom models	B - Bohr atom model - mass number - atomic number - nucleons - vec	tor atom model –							
various quar	tum numbers - Pauli's exclusion principle - electronic configur	ation – periodic							
classification	of elements - Bohr magneton - Stark effect -Zeeman effect (element	ary ideas only) -							
photo electric effect - Einstein's photoelectric equation - applications of photoelectric effect: solar									
cells, solar pa	inels, optoelectric devices								

UNI	<b>Γ – III NUCLEAR PHYSICS</b>			9+3					
Nucle	ear models – liquid drop model – magic nu	mbers – shell mod	lel – nuclear energ	y – mass defect –					
bindi	ng energy - radioactivity - uses - half life	– mean life - radi	o isotopes and use	s –controlled and					
uncon	ntrolled chain reaction - nuclear fission -	energy released i	n fission – chain 1	reaction – critical					
reacti	ion – critical size- atom bomb – nuclear rea	ctor – breeder read	ctor – importance o	of commissioning					
PFBF	R in our country – heavy water disposal, s	afety of reactors:	seismic and floods	s –introduction to					
DAE	, IAEA – nuclear fusion – thermonuclear r	eactions – differen	nces between fissio	on and fusion.					
UNI	$\Gamma - IV$ INTRODUCTION TO RELAT	<b>FIVITY AND GI</b>	RAVITATIONAI	0.1.2					
	WAVES			9+3					
Fram	e of reference - postulates of special theor	y of relativity – C	alilean transforma	ation equations					
– Lor	- Lorentz transformation equations - derivation - length contraction - time dilation - twin paradox								
- mass-energy equivalence -introduction on gravitational waves, LIGO, ICTS opportunities at									
Intern	International Centre for Theoretical Sciences.								
UNI	UNIT - VSEMICONDUCTOR PHYSICS9+3								
p-n ju	p-n junction diode – forward and reverse biasing – characteristic of diode – zener diode – characteristic								
of zer	ner diode – voltage regulator – full wave bri	dge rectifier – cor	struction and worl	king – advantages					
(no n	(no mathematical treatment) – USB cell phone charger –introduction to e-vehicles and EV charging								
statio	ons								
	HOUDS	LECTURE	TUTORIAL	TOTAL					
	HOURS	45	15	60					
TEX	T BOOKS	·							
1.	R. Murugesan (2005), Allied Physics, S. C	hand & Co, New ]	Delhi.						
2.	K. Thangaraj and D. Jayaraman (2004), Al	lied Physics, Popu	ılar Book Depot, C	hennai.					
3.	Brijlal and N. Subramanyam(2002), Text b	ook of Optics, S.	Chand & Co, New	Delhi.					
4.	R.Murugesan (2005), Modern Physics, S. G	Chand & Co, New	Delhi.						
5.	A. Subramaniyam Applied Electronics, 2 nd	Edn., National Pul	blishing Co., Chen	nai					
REF	ERENCE BOOKS								
1.	Resnick Halliday and Walker (2018), Fu Sons, Asia Pvt. Ltd., Singapore.	ndamentals of Pl	nysics, 11 th Edn., J	ohn Willey and					
2.	D.R. Khannaand H.R. Gulati (1979).Optic	cs, S.Chand & Co	. Ltd., New Delhi.						
3.	A. Beiser (1997), Concepts of Modern Ph	ysics, Tata Mc Gi	aw Hill Publicatio	on, New Delhi.					
4.	Thomas L. Floyd (2017), Digital Fundam	entals, 11 th Edn., U	Jniversal Book Sta	ll, New Delhi.					
5.	V.K.Metha (2004), Principles of electroni	$cs, 6^{th} Edn.$ , S. Cl	hand and Company	y, New Delhi.					
E RE	EFERENCES								
1.	https://www.berkshire.com/learning-center	r/delta-p-facemas	<u>sk/</u>						
2. <u>https://www.youtube.com/watch?v=QrhxU47gtj4</u>									
3. 1	4 https://www.youtube.com/watch?v=IrRrp5F-Qu4								
+. 5	https://www.youtube.com/watch:v=JIKIp	using-pressure-tra	nsducers/						
<b>6</b> .	6. <u>https://www.atoptics.co.uk/atoptics/blsky.htm</u> -								
7.	<ul> <li><u>https://www.atoptics.co.uk/atoptics/blsky.htm</u>-</li> <li><u>https://www.metoffice.gov.uk/weather/learn-about/weather/optical-effects</u></li> </ul>								

Course Outcomes	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO9	PO10	PSO1	PSO2
CO ₁	3	0	1	0	1	3	1	2	1	2	2	1
CO ₂	2	0	1	2	1	3	1	1	1	2	2	1
CO ₃	2	1	3	3	1	3	2	1	0	2	1	1
CO ₄	1	1	2	3	2	3	1	2	0	2	2	2
CO ₅	2	1	1	3	1	3	1	2	1	2	1	1
Total	10	3	8	11	6	15	6	8	3	10	8	6
Scaled to 1, 2, 3	2	1	2	3	2	3	3	2	1	2	2	2

Mapping with Programme Outcomes

 $0 - No relation \quad 1 - Low relation$ 

2 – Medium relation

3 – High relation

COU	JRSE C	ODE	COURSE NAME	L	Т	Р	С						
	XPG2	)6		0	0	1	1						
С	Р	A	ALLIED PHYSICS PRACTICAL – II	L	Т	Р	Н						
0	0.75	0.25		0	0	2	2						
COU	JRSE O	UTCON	<b>IES</b>										
On the	he succe	ssful cor	npletion of this course students would able to										
OBJ	ECTIV	ES: Ap	ply various Physics concepts to understand concepts										
of Li	ight, ele	ctricity a	nd magnetism and waves, set up experimentation to	Don	nain	I	Jevel						
verit	y theori	es, quant	ify and analyse, able to do error analysis and correlate										
resul	ts	1 / 1											
		aerstana Lioggious	basic concepts of physics and <i>laentify</i> its	Psycho	omotor	Mec	hanism						
	app	applications											
CO	2 Ide	<i>ntify</i> the	principles of optics, and <i>determine</i> refractive index.	Psycho	omotor	Ar	alyze,						
				: Affe	ctive:	Re	espond						
							spona						
CO	3 <b>De</b>	v <b>elop</b> Kno	<i>pwledge</i> to differentiate resistance of material affected	Psycho	omotor	Mec	chanism						
	by	emperati	ire.										
				Affe	ctive:	Re	ceive						
00	4 D	11.1					1 .						
	4 Red	<i>all</i> the co	oncepts of laws and <i>explain</i> the methods of magnetic	Psycho	omotor	Mec	hanism						
	liei	u.		: Affe	ctive:	Re	eceive						
CO	5 <b>Un</b>	derstand	function of semiconductor and zener diode and how	Psycho	omotor	Analyze							
	it is	working	g regulator.	: Affe	ctive:	Re	eceive						

## Any Eight of the experiments

Ex. No	Experiments (Any eight experiments)	Cos
1.	Radius of curvature of lens by forming Newton's rings	CO1
2.	Thickness of a wire using air wedge	CO1
3.	Wavelength of mercury lines using spectrometer and grating	CO1
4.	Refractive index of material of the lens by minimum deviation	CO2
5.	Refractive index of liquid using liquid prism	CO2
6.	Specific resistance of a wire using PO box	CO3
7.	Thermal conductivity of poor conductor using Lee's disc	CO3
8.	Determination of Earth's magnetic field using field along the axis of a coil	CO4
9.	Characterisation of Zener diode	CO5
10.	Construction of Zerner/IC regulated power supply	CO5
11.	Construction of AND, OR, NOT gates using diodes and transistor	CO5

12.		CO5								
		LECTURE	PRACTICAL	TOTAL						
	HOURS	0	30	30						
TEXT B	OOKS									
1. C. L. A	rora, "B.Sc .Practical Physics ", S. Chand & Co	ompany Ltd. Ram	Nagar, New Delhi-1	10055.2007.						
2. R. K. Shukla & Anchal Srivastava. "Practical Physics," New Age International (P) Ltd, Publishers,										
(Formerly Wiley Eastern Limited), 4835/24, Ansari Raod, Daryagani, New Delhi-11002. 2006.										
REFERI	ENCE BOOKS									
1. Geeta Sanon, "B. Sc., Practical Physics", 1st Edition, S. Chand and Company, 2007.										
2. Chatto Books	<ol> <li>Chattopadhyay, D., Rakshit, P. C. and Saha, B., "An Advanced Course in Practical Physics," 8th Edition, Books &amp; Allied Ltd., Calcutta, 2007.</li> </ol>									
3. G. L. S	Equires, "Practical Physics", Fourth edition, Ca	ambridge Univers	ity Press, 2001.							
4. Indu P Delhi,	rakash and Ramakrishna, "A Text Book of P 2011.	ractical Physics,"	11th Edition, Kitab	Mahal, New						
5. C. O Publis	5. C. Ouseph,K. Rangarajan, "A Text Book of Practical Physics", Volume I,II, S.Viswanathan Publishers,1997.									
E-Resou	rces:									
1. Amal Kumar Das, Department of Physics, IIT Kanpur, "Introduction to Electromagnetic Theory", National Programme on Technology Enhanced Learning (NPTEL)										
https://	//onlinecourses.nptel.ac.in/noc20_ph16/preview	<u>W</u>								

Course Outcomes	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO9	PO10	PSO1	PSO2
CO1	1	1	3	3	2	3	1	3	0	1	2	1
CO ₂	1	1	3	2	1	3	1	3	1	1	2	1
CO ₃	1	1	3	3	1	3	2	3	1	2	2	1
CO ₄	1	1	2	2	2	3	1	3	1	2	2	1
CO ₅	1	1	3	3	2	3	1	3	1	2	2	1
Total	5	5	14	13	8	15	6	15	4	8	10	5
Scaled to 1, 2, 3	1	1	3	3	2	3	2	3	1	2	2	1

## Mapping of COs with POs

 $0 - No relation \quad 1 - Low relation$ 

2 – Medium relation

3 – High relation

CO	URSE NA	ME		Quantit	ative Ap	titude – I	L	T	P	С		
CO	URSE CC	DDE			XMT207	1	1	1	0	2		
С	Р	Α					L	Т	Р	Н		
2	0	0					1	1	0	2		
PRERE	QUISITE		Nu	mber Systems								
On succe	essful com	pletion of	this	course, the stu	ıdents wi	ll be able to:						
		CO	URS	E OUTCOME	S		DOMA	IN	LE	VEL		
CO 1	Explain Numbers	the basic and to so	con lve th	cepts of Numb ne problems.	bers, H.C	C.F. & L.C.M of	Cognitiv	/e	Unders	tanding		
CO 2	Explain and to so	the basic lve the pro	conc oblen	epts of Decima	l Fraction	ns, Simplification	Cognitiv	/e	Unders	tanding		
CO 3	<b>Explain</b> Average	the basic and to sol	con ve th	cepts of Squa e problems.	re Roots	& Cube Roots,	Cognitiv	/e	Unders	tanding		
CO 4	<b>Explain</b> the basic concepts of Problems on Numbers, Problems on Ages and to solve the problems.CognitiveUnderstanding											
CO 5	O 5 Explain the basic concepts of Surds & Indices, Percentage and to Cognitive Understanding Solve the Problems.											
UNIT 1 3+3												
Numbers	, H.C.F. &	L.C.M of	Num	ibers.								
UNIT 2										3+3		
Decimal	Fractions,	Simplifica	ation									
UNIT 3										3+3		
Square R	oots & Cu	be Roots,	Aver	age.						2+2		
UNII 4	on Numh	ang Drohl								3+3		
LINIT 5			21115 (	JII Ages.						3+3		
Surds & 1	ndices Pe	rcentage								515		
LEC	TURE	15		TUTORIAL	15	PRACTICAL	0	ТОТ	AL	30		
Text Boo	ok											
1. R.S	. Aggarwa	l, Quantita	ative	Aptitude for Co	ompetitiv	e Examinations, S	Chand; 20	th edit	ion (20	13).		
Reference	es											
1. Bank	ing aware	ness by Sa	angra	m Keshari Rou	ut and So	umya Ranjan Behe	era, B.K. F	ublica	tions <b>F</b>	vt. Ltd.;		
Seco	nd edition	(2014).										
2. UGC	-CSIR NE	T/SET by	Dr. I	Pawan Sharma a	and Ansh	uman, Arihant Pub	lication.	•				
3. Fast	I rack Obje	ective Arit	hmet	ic by Rajesh Ve	erma, Arı	hant Publication, E	dition 2012	2.				
1 mar	are orbla	na com										
1. WWW 2 WWW	iagranicel	h com										
3.  www	bestguru	com										

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	2	1	0	0	2	2	2	3	2	0	
CO 2	3	2	1	0	0	2	2	2	3	2	0	
CO 3	3	2	1	0	0	2	2	2	3	2	0	
CO 4	3	2	1	0	0	2	2	2	3	2	0	
CO 5	3	2	1	0	0	2	2	2	3	2	0	
TOTAL	15	10	5	0	0	10	10	10	15	10	0	
SCALED VALUE	3	2	1	0	0	2	2	2	3	2	0	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
$1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$												

		SEMESTER II		L T P SS C						
COU	RSE CODE	XUM002		1	0	0	1	1		
COU	RSE NAME	ENVIRONMENTAL STUDI	ES	L	Т	Р	SS	Н		
C: P:	Α	0.8:0.1:0.1		1	0	0	1	2		
COU	IRSE OUTCON	AES:	Domain				Level			
CO1	<b>Describe</b> the explain anthr	significance of natural resources and opogenic impacts.	Cognitive	;		R Ui	ememł ndersta	oer ind		
CO2	<i>Illustrate</i> the and natural geological ba	e significance of ecosystem, biodiversity geo bio chemical cycles for maintaining lance.	Cognitive	;		Understand				
CO3	<i>Identify</i> the formation of major phenomenon.	facts, consequences, preventive measures ollutions and <i>recognize</i> the disaster	Cognitive Affective	;		R R	ememł eceivii	oer ng		
CO4	<i>Explain</i> the set the control n development.	Cognitive	;		Uı	ndersta Analys	ind e			
CO5	<i>Recognize</i> the various welfare towards environ	e impact of population and the concept of e programs, and <i>apply</i> the modern technology onmental protection.	Cognitive Psychomote	or		Understand Apply				
UNI	Γ-Ι NATURA	L RESOURCES AND ENERGY	I				3+3			
	utilization of su resources: Moo resources: Ren- individual in Co	arface and ground water- Mineral resources. O dern agriculture, Fertilizer-Pesticide pro- ewable and Non-renewable energy source onservation of Resources.	se, Deforestant s: Environment blems, Water ses; Alternate	tal eff logg energ	fects of ging, gy res	of mir Salin ource	ing– ity-Er s-Rol	Food lergy e Of		
UNI	Г-II ECOSYS	TEMS AND BIODIVERSITY					3+3			
	Structure and fur Food chains, Foo to Biodiversity- I conservation.	nction of an ecosystem – Producers, consumers d webs, Structure and Function of the Forest eco Endemic, Extinct and Endangered species- Con	s and decompos osystem and Aquiservation of Bio	sers –I uatic e odiver	Biogec cosyst sity: Ir	ochem em– I n-situ	ical cy ntrodu and Ex	cles- ction a-situ		
UNIT	T – III ENVIRO	NMENTAL POLLUTION					3+3			
	Definition – Ca Marine pollution management: C prevention of po	uses, effects and control measures of Air p on, Noise pollution, Thermal pollution auses, effects and control measures of ind ollution – Pollution case studies	oollution, Wate and Nuclear ustrial wastes	er pol haz – Ro	lution ards le of a	, Soil – So an inc	pollu lid w lividu	tion, vaste al in		
UNI	Γ-IV SOCIAL	ISSUES AND THE ENVIRONMENT					3+3			
	Rain water harv Acid rain, Ozor Water Act – Wi	esting–Resettlement and Rehabilitation of the layer depletion, Nuclear accidents and H Idlife Protection Act – Forest Conservation	people, Climat olocaust – Env Act.	e cha vironr	nge, C nent I	ilobal Protec	warm tion A	iing, Act –		
UNI	<u> </u>	POPULATION AND THE ENVIRONM	IENT				3+3			
	Population grow health- HIV / A studies.	wth, Variation among nations - Populatio AIDS – Role of Information Technology in	n explosion - n Environment	Envi t and	ronme huma	ent ai n hea	nd Hu lth – (	man Case		

LECT	URE	TUTORIALS	PRACTICALS		TOTAL							
30		0			30							
TEXT	BOOKS											
1.	Miller T.C	3. Jr., Environmental Science,	, Wadsworth Publishing C	o, US	A, (2000).							
2.	Townsend	C., Harper J and Michael Be	egon, Essentials of Ecolog	y, Bla	ackwell Science, UK,							
	(2003).											
3.	Trivedi R.	K and P.K.Goel, Introduction	n to Air pollution, Techno	Scien	ce Publications,							
	India, (200	03).										
4.	Disaster n Pvt. Ltd,	nitigation, Preparedness, Reco New Delhi, (2006).	overy and Response, SBS	Publis	shers & Distributors							
5.	Introducti	on to International disaster m	anagement, Butterworth H	[einen	nann, (2006).							
6.	Gilbert M	I.Masters, Introduction to Env	vironmental Engineering a	nd Sc	ience, Pearson							
	Education Pvt., Ltd., Second Edition, New Delhi, (2004).											
REFE	REFERENCES											
1.	Trivedi R.	K., Handbook of Environmer	ntal Laws, Rules, Guidelin	les, Co	ompliances and							
	Standards, Vol. I and II, Enviro Media, India, (2009).											
2.	Cunningha	am, W.P.Cooper, T.H.Gorhar	ni, Environmental Encyclo	pedia	, Jaico Publ., House,							
	Mumbai, (	(2001).										
3.	S.K.Dham	neja, Environmental Engineer	ring and Management, S.K	Kata	aria and Sons, New							
	Delhi, (20	12).										
4.	Sahni, Dis	aster Risk Reduction in Sout	h Asia, PHI Learning, Nev	v Dell	hi, (2003).							
5.	Sundar, D	isaster Management, Sarup &	z Sons, New Delhi, (2007)	•								
6.	G.K.Ghos	h, Disaster Management, A.P	P.H.Publishers, New Delhi	, (200	6).							
E RES	OURCES											
1.	http://www	w.e-booksdirectory.com/detai	ls.php?ebook=10526	1 ~								
2.	https://wv	vw.free-ebooks.net/ebook/Int	roduction-to-Environment	al-Sci	ience							
3.	https://ww	vw.free-ebooks.net/ebook/WI	hat-is-Biodiversity									
4.	https://ww	vw.learner.org/courses/envsci	/unit/unit_vis.php?unit=4									
5.	http://boo	kboon.com/en/pollution-prev	ention-and-control-ebook									
6. 7	http://ww	w.e-booksdirectory.com/deta	$\frac{11s.pnp}{ebook} = \frac{855}{4}$									
/.	http://ww	w.e-booksdirectory.com/deta	11s.pnp?ebook=0804									
8.	http://boo	kboon.com/en/atmospheric-p	ila nhn2ahaak=2740									
9.	http://ww	w.e-booksunectory.com/details.php?ebook=3/49										
10	http://ww	w.e-booksdirectory.com/deta	$113.\text{pup} \cdot \text{cook} = 2004$									
11	http://ww	w e-booksdirectory com/deta	13.pnp:000k=2110 ils nhn?ebook=1026									
12	$httn \cdot //ww$	w faadooengineers com/threa	ds/7894-Environmental-S	cience	<u>a</u>							
5. 6. 7. 8. 9. 10 11 12 13	http://boo http://ww http://ww http://boo http://ww . http://ww . http://ww . http://ww	kboon.com/en/pollution-prev w.e-booksdirectory.com/deta w.e-booksdirectory.com/deta kboon.com/en/atmospheric-p w.e-booksdirectory.com/deta w.e-booksdirectory.com/deta w.e-booksdirectory.com/deta w.e-booksdirectory.com/deta	ention-and-control-ebook ils.php?ebook=8557 ils.php?ebook=6804 ollution-ebook ils.php?ebook=3749 ils.php?ebook=2604 ils.php?ebook=2116 ils.php?ebook=1026 ds/7894-Environmental-S	cience	e							

# **SEMESTER III**

## பொதுத்தமிழ் - 3 (மூன்றாம் பருவம்)

பாடக்குறியீடு	)/ பாடப்பெயர்/	Catagory	L	Т	Р	S	н	С		
Course Code	Course Name	Category				s				
XGT301	பொதுத்தமிழ் - 3	Supportive	3	0	0	0	3	3		
Pre-requisite	பன்னிரெண்டாம் வ	குப்பில் தமிழை ஒருเ	பாடமாக	<b>5ப் பயி</b> ல்	ன்றிருக்	க வே	பண்டும்.			
பாடப்பயன்கள் Course outcomes	^r இப்பாடத்தைக் கற்ட	பதால் பின்வரும் பயல	ன்களை	மாணவ	பர்கள் _പ	அடை	_வர்.			
CO1	தமிழ்க் காப்பியங்கஎ	ரின்வழி வாழ்வியல் எ	சிந்தனை	ரயைப் (	பெறுவ	ι <del>π</del> .	புரிந்துகெ (Understa	₅ாள்ளல் and )		
CO2	காப்பியங்கள் அ உயர்வையும் சிறப்எ	∣றிமுகப்படுத்தப்படுஎ பையும் உணர்தல்	பதால்	தமிழ் ⁽	மொழி	யின்	புரிந்துகெ (Understa	காள்ளல் and )		
СОЗ	பகுப்பாய்வுசெய்த ல் Analyze									
CO4	நாவல்இலக்கியம் அ படைப்பாற்றல், கற்	அறிமுகப்படுத்தப்படு பனைத் திறன் வளர் _{ச்}	வதால் க தல்	சிந்தனை	ா ஆற்ற	றல்,	தெரிந்துெ (Apply)	காள்ளல்		
CO5	யாப்பு, அணி ஆகியவற்றைக் க எதிர்கொள்ளுதல்	இலக்கணங்கள், ெ கற்பதன் மூலம்	மொழிெ போட்ட	பயர்ப்பு _{டி} த் ே	த் தி தேர்வுக	ிறன் ளை	r புரிந்துகொள்ளல் r (Understand )			
	K1- Remember; K2 Evaluate; K6 – Crea	– Understand; K3 –/ ate.	Apply; K	4 Analy	ze; K5					
அலகு - I		பெருங்காப்பியங்	்கள்				9மண்	ிகள்		
	சிலப்பதிகாரம் <del>-</del> வழக் ₍	தரைகாதை – இளங்	கோவடி	கள் மன	ளிமேக	സെ -				
ஆதிரைபிச்சையிட்டகாதை – சீத்தலைச்சாத்தனார்  சீவகசிந்தாமணி -										
அலகு - II	பூமகள்இலம்பகம் – திருத்தக்கதேவர் வளையாபதி - நாதகுத்தனார் 5 - II சித்தர்பாடல்கள் 9 மணிகள்									

	திருமூலர் பாடல்கள் (10 பாடல்கள்) கரூர்  சித்தர்பாடல்கள் (10 பாடல்கள்)	
	– பாம்பாட்டிச் சித்தர்கள் - (10 பாடல்கள்) குதம்பைச் சித்தர்கள் - (10	
	பாடல்கள்)	
அலகு - III	புதினம்	9மணிகள்
	வஞ்சிமா நகரம் (வரலாற்றுப் புதினம்) - நா.பார்த்தசாரதி	
அலகு - IV	பாடம் தழுவிய இலக்கிய வரலாறு	9மணிகள்
அலகு - V	மொழித் திறன்	9மணிகள்
	1. நூல் மதிப்புரை	
	2. திறனாய்வு செய்தல்	
	3. கடிதம் வரைதல்	
	4. விண்ணப்பம் எழுதுதல்	
	Total Lecture Hours	45மணிகள்
பாடநூல்கள்		
பாடநூல்கள் 1.	சிலப்பதிகாரம், கழக வெளியீடு, சென்னை	
பாடநூல்கள் 1. 2.	சிலப்பதிகாரம், கழக வெளியீடு, சென்னை மணிமேகலை, கழக வெளியீடு, சென்னை	
பாடநூல்கள் 1. 2. 3.	சிலப்பதிகாரம், கழக வெளியீடு, சென்னை மணிமேகலை, கழக வெளியீடு, சென்னை சீவகசிந்தாமணி, கழக வெளியீடு, சென்னை	
பாடநூல்கள் 1. 2. 3. 4.	சிலப்பதிகாரம், கழக வெளியீடு, சென்னை மணிமேகலை, கழக வெளியீடு, சென்னை சீவகசிந்தாமணி, கழக வெளியீடு, சென்னை சித்தர் பாடல்கள், பாரி நிலையம், சென்னை	
பாடநூல்கள் 1. 2. 3. 4. பார்வைநூல்க	சிலப்பதிகாரம், கழக வெளியீடு, சென்னை மணிமேகலை, கழக வெளியீடு, சென்னை சீவகசிந்தாமணி, கழக வெளியீடு, சென்னை சித்தர் பாடல்கள், பாரி நிலையம், சென்னை ள்	
பாடநூல்கள் 1. 2. 3. 4. பார்வைநூல்க 1.	சிலப்பதிகாரம், கழக வெளியீடு, சென்னை மணிமேகலை, கழக வெளியீடு, சென்னை சீவகசிந்தாமணி, கழக வெளியீடு, சென்னை சித்தர் பாடல்கள், பாரி நிலையம், சென்னை <b>ள்</b> தமிழ் இலக்கிய வரலாறு – சிற்பிபாலசுப்பிரமணியன்.	
பாடநூல்கள் 1. 2. 3. 4. பார்வைநூல்க 1. 2.	சிலப்பதிகாரம், கழக வெளியீடு, சென்னை மணிமேகலை, கழக வெளியீடு, சென்னை சீவகசிந்தாமணி, கழக வெளியீடு, சென்னை சித்தர் பாடல்கள், பாரி நிலையம், சென்னை <b>ன்</b> தமிழ் இலக்கிய வரலாறு – சிற்பிபாலசுப்பிரமணியன். புதிய நோக்கில் தமிழ்இலக்கிய வரலாறு - தமிழண்ணல்	

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

#### Web Sources

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- Tamil virtual University Library www.tamilvu.org/library http://www.virtualvu.org/library
- Project Madurai www.projectmadurai.org.
- Chennai Library www.chennailibrary.com<http://www.chennailibrary.com>.
- Tamil Universal Digital Library-www.ulib.prg<http://www.ulib.prg>.
- Tamil E-Books Downloads tamilebooksdownloads.blogspot.com
- Tamil Books online books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels online books.tamilcube.com

Strong-3, Medium-2, Low-1

COU	RSE CODE	XGE302	L	Т	P	SS	Η	C	
COU	RSENAME	ENGLISH III	3	0	0	0	3	3	
C:P:A	A- 3:0:0		•						
COU	<b>RSE OUTCOM</b>	ES:	D	omai	n	L	evel		
After	the completion	of course, the learners will be able to get							
comp	rehensive skills	like:							
CO1	Broaden their	outlook and sensibility and be acquainted	Co	gniti	ve	Un	dersta	and	
~~~	with cultural di	versity and divergence in perspectives.							
CO2	Be <i>updated</i> wi	th basic informatics skills and attitudes relevant to	Co	gniti	ve	ŀ	Apply	r	
<u> </u>	ne emerging k	nowledge society	C			T I., J			
COS <i>Troduce</i> grammatically and fullomatically context language. Cognitive Off									
CO4 <i>Gain</i> knowledge in writing techniques to meet academic Cognitive Ur and professional needs.									
CO5	Be <i>equipped</i> w	ith sufficient practice in Vocabulary,	Co	gniti	ve	Une	lersta	nd	
	Grammar, Con	prehension and Remedial English from the		0					
	perspective of	career oriented tests.							
SYLI	LABUS						HOU	RS	
UNIT-I POETRY 6									
1.1	The Voice of the	e Mountains - Mamang Dai							
1.2	2 Sita - Toru Dutt								
1.3	A Song of Hop	e - Oodgeroo Noonuccal							
1.4	In an Artist's St	udio - Christina Rossetti							
UNIT	-II SCENES F	ROM SHAKESPEARE				6-	+3+0=	=9	
2.1	Romeo & Juliet	-The Balcony Scene							
2.2	Macbeth-Banque	et Scene							
2.3	Julius Caesar - N	lurder Scene							
UNIT	-III SPEECHE	S OF FAMOUS PERSONALITIES				6-	+3+0=	=9	
3.1	Tryst with Destin	ny- Jawaharlal Nehru							
3.2	2 Yes, We Can-Ba	arack Obama							
3.3	S You've Got to H	and What You Love-Steve Jobs							
UNII	-IV LANGUA	GE COMPETENCY				6-	+3+0=	=9	
4.1	Writing letters and	nd emails							
4.2	Writing and mes	saging in social media platforms							
1.2	[blogs, twitter, 1	nstagram. facebook]							
4.3 Learning netiquette, email etiquette									
	- V ENGLISH	I FUK WUKKPLACE)+3+1	U=9	
5.1	Data Interpretation	on and Reporting							
5.2	Data Presentation	n and analysis							
5.3	Online Martin	Torma and avaraging wood							
51	Conducting and	- remis and expressions used							
5.4		$\mathbf{I} = 30 / \mathbf{T} = 15$	7	[ata]	Нал	re	15		
		1-30/1-13	1	utal	1100	19	40	,	

CO	URSE NA	ME	Ι	Differential Equ	uations a	nd Applications	L	T	Р	С
CO	URSE CO	DE			XMT303		3	1	0	4
С	Р	Α					L	T	Р	H
4	0	0					3	1	0	4
PRERE	QUISITE		Dif	ferential Calcul	us					
On succe	essful com	pletion of	fthis	course, the stu	idents wi	l be able to:				
		CO	URS	E OUTCOME	S		DOMA	IN	LEV	'EL
CO 1	Demonst homogen	t rate the leous equa	solu tions	tions of home	ogeneous in two var	equations, non- iables.	Cognitive		Underst	anding
CO 2 Find the solutions of equations of first order but not of higher degree and to determine particular integrals of algebraic, Cognitive exponential, trigonometric functions and their products									Remem	bering
CO 3Find solutions of simultaneous linear differential equations, linear equations of second order and to find solutions using the methodCognitiveRemember										bering
CO 4	CO 4Build a PDE by eliminating arbitrary constants and arbitrary function and to obtain the complete singular and general integralsCognitiveApplying									
CO 5	Solve Di	fferential	equat	ions using Cha	rpit's met	nod	Cognitive		Appl	ying
UNIT 1	Ordinar	y Differei	ntial	Equations				I	9	+ 3
Variable	separable	- Homoge	neou	s Equation - No	on-Homog	geneous Equations	of first de	gree ii	n two va	riables -
Linear Ed	$\frac{1}{1}$	Sernoulli's	s Equ	ation - Exact di	tterential	equations.			0	- 2
Equation	<u>solvable</u>	$\frac{101 \text{ Hrst}}{\text{for } dy/dy}$	Fai	ution solvable	for y = F	e Equation solvable	for y_ Cla	iraut'	s form	T J
Equation Equation	s with con	istant coef	ficie	nts - Particular	integrals	of algebraic, expo	onential, tr	igono	metric fi	inctions
UNIT 3	Simultar	neous line	ar di	fferential equa	ations				9	+ 3
Linear E	quations o	f the Seco	ond C	Order - Comple	te solutio	n in terms of a kn	own integ	rals -	Reductio	onto the
Normal f	orm - Cha	nge of the	Inde	pendent Variab	le - Metho	od of Variation of	Parameters	3.		
UNIT 4	Partial d	lifferentia	<u>l equ</u>	iation		1.1		<u> </u>	9	+3
Formatio	n of PDE	by Elimi	nating	g arbitraryconst	tants and	arbitrary function	s – comple	ete int	egral –	sıngular
Integral-	Deneral in	legral -La	agran	ge's Linear Equ	ations - s	Simple Application	18.		0	<u> </u>
Special m	ethods – S	tandard fo	orms -	– Charpit's Met	hods – Si	mpleApplications)	13
LEC	TURE	45		TUTORIAL	15	PRACTICAL	0	ТОТ	TAL	60
Text Boo	ok	1			1	1	I	L	I	
1. Diffe Printe Unit I : Unit II :	erential Eq ers – Chen Chapter 2 Chapter 4,	uations an nai, .2009 Sectio 5 Sectio	d its ns 1- ns 1 -	applications, S 6 - 3, 1 - 4	. Narayan	an, T. K. Manickav	vachagam]	Pillay,	, S. Visw	anathan

Unit III: Chapter 2Sections 1-4Unit IV: Chapter 12Sections 1-4Unit V: Chapter 12Sections 5-6

References

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- 2. Elements of Partial Differential Equations, I. Sneddon, McGraw-Hill, International Edition, 2013.
- 3. G.F. Simmons, Differential equations with applications and historical notes, 2ndEd,Tata McGraw Hill Publications, 2017.

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- 2. http://scinece.utm.my/ug/course_list_old/sscm1703/
- 3. http://nptel.ac.in

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	2	1	0	0	0	1	1	1	2	1	0
CO 3	2	1	0	0	0	1	1	1	2	1	0
CO 4	3	2	1	0	0	2	2	2	3	2	0
CO 5	3	2	1	0	0	2	2	2	3	2	0
TOTAL	13	8	3	0	0	8	8	8	13	8	0
SCALED VALUE	3	2	1	0	0	2	2	2	3	2	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1-5→1, 6-10→2, 11-15→3											

CO	URSE NA	ME		Vector Calcu	ulus and	Applications	L	T	С	
CO	URSE CC	DE			XMT304	ł	3	1	0	4
С	Р	Α					L	Т	Р	Н
4	0	0					3	1	0	4
PRERE	QUISITE		Diff	ferential and int	tegral cal	culus		-1		1
On succe	essful com	pletion of	f this	course, the stu	idents wi	ll be able to:				
		CO	URS	E OUTCOME	S		DOMA	IN	LEV	EL
CO 1	Find the of a scala	derivative ar product	e of a and v	vector, derivative contraction derivative contractive contra	ve of a sca	alar and derivative	Cognitiv	ve	Remem	bering
CO 2	Find gra	dient of a	Cognitiv	ve	Apply	ving				
CO 3	Solve sin	Cognitiv	ve	Apply	ving					
CO 4	Solve sur	Cognitiv	ve	Apply	ving					
CO 5 Analyze the theorems of Gauss, Stoke's and Green's (Two Cognitive App) Dimension).										ving
UNIT 1									9 -	- 3
Vector p Derivativ	oint functive of a pro-	on - Scala oduct of a	ar poi scala	int function - I or and a vector	Derivative point fu	e of a vector and c nction - Derivative	lerivative of a scal	of a su ar proc	um of ve duct and	ectors - vector
UNIT 2									9 -	- 3
The vect	or operator	"del", Th	ne gra	dient of a scala	r point fu	nction - Divergenc	e of a vec	tor - C	url of a v	vector -
solenoida	al and irrot	ational ve	ctors	 simple applic 	ations.				0	2
UNII 3 Laplaciai	operator	Vector id	entiti	es - Line integr	al - simn	le problems			9 -	- 3
UNIT 4		v cetor la	Ciltiti		ui siiip				9 -	- 3
Surface i	ntegral - V	olume int	egral	– Applications.	•					
UNIT 5				••					9 -	- 3
Gauss div	vergence 7	Theorem,	Stoke	s' Theorem, G	reen's T	heorem in two dim	ensions –	Applic	ations to	real
life situa	tions.			TUTODIAL			0	TOT	A T	<u> </u>
	TURE	45		TUTORIAL	15	PRACTICAL	0	101	AL	60
Text Boo	ok									
1. Vecto	or Analysis	s, P. Durai	Pand	lian, Laxmi Du	rai Pandia	an, Emerald Publish	ners 2017.			
U U U U U	nit I : Ch nit II : Ch nit III: Ch nit IV: Ch nit V: Cha	apter 2 apter 2 apter 2, 3 apter 3 upter 4	Section Section Section Section Section	ons 2.1, 2.2., 2.7 ons 2.4, 2.5, 2.6 ons 2.8, 3.1, 3.2 ons 3.5, 3.6 ions 4.2, 4.3, 4.	3 5, 2.7 2, 3.3., 3.4 .4, 4.5	4				

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http://mathforum.org,

http://www.opensource.org

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COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	2	1	0	0	0	1	1	1	2	1	0
CO 2	3	3	2	0	1	3	3	3	3	3	0
CO 3	3	3	2	0	1	3	3	3	3	3	0
CO 4	3	3	2	0	1	3	3	3	3	3	0
CO 5	3	3	2	0	1	3	3	3	3	3	0
TOTAL	14	13	8	0	4	13	13	13	14	13	0
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3											

CO	URSE NA	ME	Statistics	for Data	Science I	L	L T P					
CO	URSE CC	DDE		XMT305		2	1		0	3		
С	Р	Α				L	Т		P	Н		
4	0	0				2	1		0	3		
PRERE	QUISITE		Basic Statistics									
On succ	essful com	pletion of	f this course, the stu	udents wil	l be able to:							
		CO	URSE OUTCOME	2S		DOMA	IN	L	EVE	Ľ		
CO 1	Demonst	t rate to ur	derstand basics of I	Data Science	ce.	Cognitiv	Unde	erstai	nding			
CO 2	Classify	the variou	s types of data colle	ction and p	pre-processing.	Cognitiv	ve	Unde	erstai	nding		
CO 3	Identify data set.	measures	of central tendency a	sion for the given	Cognitiv	ve	Aj	pplyi	ng			
CO 4	Constru regressio	ct the m n using vi	Cognitiv	ve	Aj	pplyi	ng					
CO 5 Analyze the model selection and the prediction by using Cognitive Analyzing									ing			
UNIT 1	Introduc	ction							6	+ 3		
Introduct	ion to Dat	a Science	- Evolution of Dat	a Science	– Data Science R	oles – Sta	ges in	a Da	ata S	cience		
Project -	Applicatio	ons of Dat	a Science in various	fields – D	ata Security Issue	5.	-					
UNIT 2	Data Co	llection a	nd Data Pre-Proces	ssing					6	+ 3		
Data Co	llection S	trategies	– Data Pre-Process	sing Over	view – Data Cle	eaning – 1	Data	Integ	ratio	n and		
I ransfor	$\frac{1}{100}$	Data Reduc	tion – Data Discreti	zation.					(1.2		
UNIT 3	Exploration	tory Data	Analytics Standard Daviation	Skownor	and Vurtagia C	malation	Statist	iac	0 ANC	+3		
UNIT 4	Model D	us – Mean	, Standard Deviation	i, Skewnes	ss and Kurtosis–Co	orrelation s	Statist	$\frac{1 \cos - 1}{1 \cos - 1}$	ANC	$\frac{VA}{\pm 3}$		
Simple of	nd Multipl	o Dograda	ion Model Evoluet	ion using	Visualization De	aidual Dlat		atribu	tion	$\frac{\top \mathbf{J}}{Dlot}$		
Polynom	ial Regress	sion and P	ipelines.	lion using	v isualization – Re	Sidual 1 10	l - DR	suiou	uon	1 101 –		
UNIT 5	Model E	valuation							6	+ 3		
Generaliz	ation Erro	r – Out-of-	-Sample Evaluation	Metrics – (Cross Validation –	Overfittin	g – Ur	nder F	littin	g and		
Model Se	election – F	rediction	by using Ridge Reg	ression.								
LEC	TURE	30	TUTORIAL	15	PRACTICAL	0	тот	TAL		45		
Text Boo	ok	- 1		1				1				
1. Jojo I	Moolayil, '	"Smarter I	Decisions: The Inters	section of I	IoT and Data Scien	nce", PAC	KT, 2	016.				
Reference	es											
1. Cathy	O'Neil and	d Rachel S	Schutt, "Doing Data	Science",	O'Reilly, 2015.							
1. Davie	d Dietrich,	Barry He	ller, Beibei Yang, "I	Data Scien	ce and Big data A	nalytics", I	EMC	2013				
2. Raj, I	Pethuru, "H	Handbook	of Research on Clou	ud Infrastru	uctures for Big Da	ta Analytic	es", IC	GI Glo	obal.			

- 3. Gupta, S.C. and Kapoor, V.K.: "Fundamentals of Mathematical Statistics", Sultan & Chand & Sons, New Delhi, 11th Ed, 2002.
- 4. Hastie, Trevor, et al. "The elements of Statistical Learning", Springer, 2009.
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https://nptel.ac.in

	COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	2	1	0	0	2	2	2	3	2	0	
CO 2	3	2	1	0	0	2	2	2	3	2	0	
CO 3	3	3	2	0	1	3	3	3	3	3	0	
CO 4	3	3	2	0	1	3	3	3	3	3	0	
CO 5	3	3	3	1	2	3	3	3	3	3	1	
TOTAL	15	13	9	1	4	13	13	13	15	13	1	
SCALED VALUE	3	3	2	1	1	3	3	3	3	3	1	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
1-5→1, 6-10→2, 11-15→3												

CO	COURSE NAME Statistics for Data Science Lab I using R L T Programming										
CO	URSE CO	DDE	XMT306	0	0	2	1				
С	Р	Α		L	Т	Р	Н				
1	0	0		0	0	2	1				
PRERE	QUISITE		Basic Statistics								
On succe	essful com	pletion of	f this course, the students will be able to:								
		CO	URSE OUTCOMES	DOMAIN LEVEL							
CO 1	Constru	ct the free	uency distributions for the given data sets.	Cognitive Applying							
CO 2	Interpre for the gi	t and drav	w pie, bar, line, histogram and scatter diagrams sets.	Cognitiv	/e	Evalua	ting				
CO 3	Identify Method a	the coet and Spear	fficient of correlation using Karl Pearson's man's Method.	Cognitiv	/e	Apply	ing				
CO 4	Examine variables	e the exis using line	tence of a relationship between two or more ear regression.	Cognitiv	/e	Analyz	zing				
CO 5	Estimate the help of	e the inter of curve f	-relation between two or more phenomena with itting.	Cognitive Evaluating							
List of E	of Experiments										

1. Formation of discrete and continuous frequency distributions-descriptive statistics.

2. Diagrams: Pie, bar, line and scatter diagrams, Graphs: Histogram and normal probability plot.

3. Correlation coefficient, rank correlation, partial and multiple correlations.

4. Regression: Simple and multiple linear regression.

5. Curve estimation.

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	3	2	0	1	3	3	3	3	3	0	
CO 2	3	3	3	2	3	3	3	3	3	3	2	
CO 3	3	3	2	0	1	3	3	3	3	3	0	
CO 4	3	3	3	1	2	3	3	3	3	3	1	
CO 5	3	3	3	2	3	3	3	3	3	3	2	
TOTAL	15	15	13	5	9	15	15	15	15	15	5	
SCALED VALUE	3	3	3	1	2	3	3	3	3	3	1	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
1-5→1, 6-10→2, 11-	15→3											

CO	URSE NA	ME	Quantita	ative Apt	itude - II	L T P							
CO	URSE CO	DDE		XMT307	,	1	1	0	2				
С	Р	A				L	Т	Р	Н				
2	0	0				1	1	0	2				
PRERE	QUISITE	I	Number systems a	nd algebra	a	I							
On succ	essful com	pletion of	f this course, the stu	ıdents wi	ll be able to:								
		CO	URSE OUTCOME	S		DOMA	IN	LEV	EL				
CO 1	Apply the solve the	e basic co problems	oncepts of profit and	loss, ratio	o & proportion to	Cognitiv	ve	Apply	ving				
CO 2	Apply the problems	ne basic c	oncepts of partnersh	ip, chain	rule to solve the	Cognitiv	ve	Apply	ving				
CO 3	CO 3 Apply the basic concepts of time & work, pipes & cisterns to solve Cognitive Applying CO 4 Apply the basic concepts of time & work, pipes & cisterns to solve Cognitive Applying												
CO 4	the problems. CO4 Apply the basic concepts of time & distance and problems on trains to solve the problems. Cognitive Applying												
CO 5	Apply the mixture t	ne basic co to solve th	oncepts of boats and e problems.	l streams	and allegation or	Cognitiv	ve	Apply	ving				
UNIT 1	1								3+3				
Profit an	d Loss, Ra	tio and Pr	oportion.						2+2				
UNIT 2	in Chain	Dula							3+3				
Farmersi LINIT 3	lip, Chain	Kule.							3+3				
Time and	l work Pir	es and Ci	sterns						515				
UNIT 4			5101115.						3+3				
Times an	d Distance	e. Problem	on Trains						0.0				
UNIT 5		,							3+3				
Boats and	d Streams a	and allega	tion or mixture.										
LEC	TURE	15	TUTORIAL	15	PRACTICAL	0	TOTA	4L	30				
Text Bo	ok		I	1	1		1	I					
1. R.S.	Aggarwal	. Ouantita	tive Aptitude for Cor	mpetitive	Examinations, S C	hand; 20 th	edition	n (2013).				
Referen	ces	<u> </u>	A	-	,	,			<u>,</u>				
1. Bank	ing aware	ness by S	angram Keshari Rou	ut and So	umya Ranjan Behe	era, B.K. I	Publicat	tions Pv	rt. Ltd.;				
Seco	nd edition	(2014).											
2. UGC	-CSIR NE	T/SET by	Dr. Pawan Sharma	and Ansh	uman, Arihant Pub	lication.	_						
3. Fast	Frack Obje	ective Arit	thmetic by Rajesh Vo	erma, Aril	hant Publication, E	dition 201	2.						
E-Refer	ences												
1. w	ww.careerl	oless.com											
2. w	ww.jagranj	osh.com											
3. w	/ww.bestgi	uru.com											

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	3	2	0	1	3	3	3	3	3	0	
CO 2	3	3	2	0	1	3	3	3	3	3	0	
CO 3	3	3	2	0	1	3	3	3	3	3	0	
CO 4	3	3	2	0	1	3	3	3	3	3	0	
CO 5	3	3	2	0	1	3	3	3	3	3	0	
TOTAL	15	15	10	0	5	15	15	15	15	15	0	
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0	
0 - No Relation, 1 –	0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3												

C	ours	e Name		DISAST	ER MA	NAGEMEN	T		L	Т		P	С
0	Cours	e Code			XUM	003			1	0		0	1
С	Р	Α							L	Т		SS	Н
1	0	0							1	0		1	1
Prere	quisi	te	Basic l	mowledge abou	t enviror	ment.							
On su	ccess	ful completion	on of thi	s course, the stu	dents wi	ll be able to:							
				Course Outcor	nes				Dom	ain		Lev	vel
CO1		Understand	ling the	concepts of app	lication	of types			Cogn	itive	Aŗ	oply	
		Of disaster p	orepared	ness									
CO2		Infer the en	d condit	ions & Discuss t	he failur	es due to dis	aster.		Cogn	itive	Ar	nalyze	;
CO3		Understand	ling of	importance of s	eismic w	aves			Cogn	itive	Ar	nalyze	;
	occurring globally												
CO4	CO4Estimate Disaster and mitigation problems.CognitiveApply												
CO5		Keen know	l edge on	e essentials of r	isk reduc	ction			Cogn	itive	Aŗ	oply	
UNIT	1	INTRODU	CTION									3	I.
Introd identi to dor	luctio ficati ninan	n–Disasterpr on – Risk sha t approach –	eparedn ring – D disaster	ess–Goalsandob isaster and deve – development	jectiveso lopment linkage	ofISDRProgr Developme s – Principle	amme- nt plans of risk	Risk s and disa c partners	aster ma ship.	anagen	nent	t–Alte	rnative
UNIT	2	APPLICAT REDUCTION	TIONOI ON	TECHNOLO	GY IND	ISASTERR	ISK					3	1
Appli syster videot study.	cation n and telecc	n of various t other system onferencing.T	echnolo 1s – Geo Yriggerm	gies: Databases- graphic informa echanism–Rem	-RDBMS ation syst otesensii	S–Managemo ems – Intran ng-aninsight-	ent Info nets and -contril	ormation lextranet butionof	System s– remote	sensin	isio Ig ai	n sup nd GI	port S-Case
UNIT	3	AWAREN	ESSOF	RISKREDUCT	TION							3	1
Trigg	erme	chanism_con	stitution	oftriggermechar	nism_risl	reductionby	veducat	ion-disa	ster				
Inforr	natio	n network-ris	sk reduc	tion by public a	wareness								
UNIT	` 4	DEVELOP	MENT	PLANNING O	NDISAS	TER						3)
Implie	catior	ofdevelopme	entplann	ing–Financialar	rangeme	nts–Areasof	improv	ement-D	Disaster	Prepar	edn	ess-	
Comm	nunit	ybased disast	er mana	gement–Emerge	ency resp	onse.							
UNIT	UNIT 5 SEISMICITY 3												
Seism	ic wa	ives–Earthqu	akes and	l faults– measur	res of a e	arth quake, r	nagnitu	ide and in	ntensity	-grou	nd c	lamag	ge—
Tsuna	mis a	ind earthquak	tes.										
L	ectur	e 1	15	Tutorial	-	Practic	al	-		Tota	al		15
Text	Book												
1.Si Inte	ddha rnatio	rtha Gautam onal PubHou	and I se,2012	K Leelakrisha	Rao,"Di	saster Mana	agemen	t Progra	ammes	and	Poli	icies"	, Vista

2. ArunKumar, "GlobalDisasterManagement", SBSPublishers, 2008

References

- 1. "Encyclopedia Of Disaster Management", Neha Publishers & Distributors, 2008
- 2. Pardeep Sahni, Madhavimalal go daandariya bandu, "DisasterriskreductioninSouthAsia", PHI, 2002
- 3. Amitasinvhal, "Understandingearthquakedisasters" TMH, 2010.
- 4. Pardeep Sahni, Alka Dhameja and Umamedury, "Disastermitigation: Experiences and reflections", PHI, 2000

E-References

http://icom.museum/disaster_preparedness_book/copyright.pdf

http://www.international.icomos.org/centre_documentation/bib/riskpreparedness.pdf

			C	Os vs POs	5				
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	3	2	3	1	1	1	1
CO 2	3	3	3	3	3	1	2	1	1
CO 3	3	3	3	3	3	1	2	1	1
CO 4	3	3	3	2	3	1	1	1	1
CO 5	3	3	3	2	3	1	1	1	1
TOTAL	15	15	15	12	15	5	7	5	5
SCALED VALUE	3	3	3	3	3	1	2	1	1
0 - No Relation, 1 – I	Low Relati	ion, 2- Me	dium Rela	ation, 3- H	ligh Rela	tion			
$1-5 \rightarrow 1, 6-10 \rightarrow 2, 11$	$-15 \rightarrow 3$								

SEMESTER IV

பொதுத்தமிழ் - 4 (நான்காம் பருவம்)

பாடக்குறியீடு	/	பாடப்பெயர்/	Octorer	L	Т	Р	SS	Н	С					
Course Code		Course Name	Category											
XGT401		பொதுத்தமிழ் - 4	Supportive	3	0	0	0	3	3					
Pre-requisite		பன்னிரெண்டாம் வ	குப்பில் தமிழை ஒரு	பாடமாக	கப் பயி	ன்றிருச்	க வேன்	ாடும்.						
பாடப்பயன்க	ள் /													
Course		இப்பாடத்தைக் கற்ப	பதால் பின்வரும் பய	ன்களை	மாணவ	பர்கள் ,	அடைவ	τ.						
outcomes														
CO1		சங்கஇலக்கியத்தில்	காணப்பெறும் வாழ்	வியல் ச	ிந்தனை	ாகளை	புரி	ிந்துகொ	ர்ளல்					
		அறிந்து கொள்வர்.					(U	nderstand	1)					
CO2		தமிழின் தொன்மை	யையும், செம்மொழி _{ச்}	ந் தகுதிஎ	யையும் ,	அறிந்த	ர பர	ிந்துகொ	ர்ளல்					
002		கொள்ளுதல்.					(U	nderstand	(k					
CO3		நாடக இலக்கியம் க	மூலம் நடிப்பாற்றனை	லயும், கஎ	லைத்		ചെ	ரிந்து கொ	ாள்ளல்					
003		தன்மையையும், பன	டைப்பாற்றலையும் வ	பளர்த்தவ	ΰ.		(A	oply)						
CO1		தமிழிலிருந்து அலுவ	பலகக்கடிதங்களை ெ	மாழிபெ	பயர்ப்பத	தால்	ചെ	ரிந்து கொ	ாள்ளல்					
004		ஆங்கில அறிவைப்	பெறுதல்.				(A	oply)						
CO5		மொழியறிவோடு ே	வலை வாய்ப்பினை	ப் பெற	பதல் .		பக	ரப்பாய்வு [.]	செய்தல்					
005							An	alyze						
		K1- Remember; K2	– Understand; K3 –	Apply; k	(4 Analy	/ze; K5								
		Evaluate; K6 – Crea	ate.											
அலகு - I			எட்டுத்தொகை				9 и	ணிகள்						
	நற்	றிணை (10,14,16)	குறுந்தொகை (10	6,17,19,	20,25,2	9,38,44	40),							
	கலி	ித்தொகை(38,51),	அகநானூறு (15,33,5	5), L	ுறநான	ாறு							
	(37	,88,112), பரிபாடல்	(55)											
அலகு - II			பத்துப்பாட்டு				9 и	ணிகள்						
	நெ	டுநல்வாடை – நக்கீ	<i>т</i> і.											
அலகு - III			நாடகம்				9 и	ணிகள்						
	கல	கக்காரர் தோழர் டெ	ரியார் – மு.ராமசாமி											

அலகு - IV	பாடம் தழுவிய இலக்கிய வரலாறு	9மணிகள்
அலகு - V	மொழித் திறன்	9மணிகள்
	1. மொழிபெயர்ப்பு / கலைச்சொற்கள்	
	2. ஆங்கிலப் பகுதியைத் தமிழில் மொழிபெயர்த்தல்.	
	3. அலுவலகக் கடிதம் – தமிழில் மொழிபெயர்த்தல்.	
	Total Lecture Hours	45மணிகள்
பாடநூல்கள்		
1.	எட்டுத் தொகை, எம்.நாராயண வேலுப்பிள்ளை, நர்மதா பதிப்பகம், செ	⊧ன்னை.
2.	பத்துப்பாட்டு மூலமும் நச்சினார்க்கினியர் உரையும், டாக்டர்.உ.வே.சா	-மிநாதையர், டாக்டர்
	.உ.வே.சாமிநாதையர் நூல் நிலையம், சென்னை.	
3.	கலகக்காரர்தோழர்பெரியார் – மு.ராமசாமி (நாடகநூல்)	
பார்வைநூல்க	ள்	
1.	தமிழ்இலக்கிய வரலாறு – சிற்பிபாலசுப்பிரமணியன்.	
2.	புதியநோக்கில் தமிழ்இலக்கியவரலாறு - தமிழண்ணல்	
3.	வகைமை நோக்கில் தமிழ்இலக்கியவரலாறு – எஃப்.பாக்கியமேரி.	

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

Web Sources

- Tamil Heritage Foundation www.tamilheritage.org<http://www.tamilheritage.org>
- Tamil virtual University Library www.tamilvu.org/library http://www.virtualvu.org/library
- Project Madurai www.projectmadurai.org.
- Chennai Library www.chennailibrary.com<http://www.chennailibrary.com>.
- Tamil Universal Digital Library-www.ulib.prg<http://www.ulib.prg>.
- Tamil E-Books Downloads tamilebooksdownloads.blogspot.com
- Tamil Books online books.tamilcube.com
- Catalogue of the Tamil books in the Library of British Congress archive.org
- Tamil novels online books.tamilcube.com

Strong-3, Medium-2, Low-1

COU	RSE CODE	XGE402	XGE402 L T P SS									
COU	RSENAME	ENGLISH IV	2	1	0	0	3	3				
C:P:A	A- 3:0:0											
COU	RSE OUTCOM	ES:	De	omai	n	L	evel					
After	the completion	of course, the learners will be able to get										
comp	rehensive skills	like:										
CO1	<i>Learn</i> to con	municate effectively and appropriately	Co	gniti	ve	Une	lersta	ınd				
<u> </u>	In real file si	ualion.	C	:4:								
02	curriculum	effectively for study purpose across the		gniti	ve	F	трріу					
CO3	Develop inte	est in and appreciation of Literature	Co	gniti	ve	Und	erstar	nd				
CO4	Develop and skills	integrate the use of the four language	Co	gniti	ve	Uno	lersta	ınd				
CO5Enhance their language skills especially in the areas ofCognitiveUnder												
COSEnhancetheir language skills especially in the areas ofCognitiveUndergrammar and pronunciation. </td												
grammar and pronunciation. H SYLLABUS H												
SYLLABUS H UNIT-I LIFE WRITING 6+3												
1.1	I am Malala-M	alala Yousafzai - Chapter 1										
1.2	My Inventions	- Nikola Tesla - Chapter 2										
UNIT	-II ONE AC	T PLAY				6-	-3+0=	=9				
2.1	The Zoo Story	- Edward Albee										
2.2	The Proposal-	Anton Chekhov										
UNIT	-III INTERV	TEWS				6-	-3+0=	=9				
Interv	iews											
3.1	Nelson Mandel	a's Interview with Larry King.										
3.2	Rakesh Sharma	's Interview with Indira Gandhi										
	from Space											
3.3	Lionel Messi w	ith Sid Lowe (Print)										
UNIT	-IV LANGU	AGE COMPETENCY				6-	-3+0=	=9				
4.1	Refuting, Arguin	ng & Debating	1 ~ '									
4.2	Making Sugges	ions & Responding to Suggestions, Asking for and	I G ₁ V	ıng A	Adv10	e						
4.3	Interviews (face	to face, telephone and video conferencing)						0.0				
UNII	- V ENGLIS	H FOR WORKPLACE				()+3+(J=9				
5.1	Job Application	as: Covering letters, CV and Resume										
5.2	Creating a digit	al profile - Linkedin		.:	۸ TT	л						
5.5	Cradit/dabit and	Online & Manual): creation of account, rallway res	serva	.10n,	AIN	/1,						
5 4 Body Language -Practical Skills for Interviews.												
5.7	Dou'y Language	$\frac{1}{L=30} / T=15$	Т	otal	Нот	irs	45					
Tutori	al Activities			otul	1100		-15					
9)	Reading and un	derstanding incomplete texts										
10) Summarize a piece of prose or poetry												
11)	Communication	Practice										
12)	Role play											

Text books:

- Borg, Taylor & Francis, Writing Your Life: A Guide to Writing Autobiographies, Mary 2021
- Colin Dolley, Rex Walfor. The One-Act Play Companion: A Guide to plays, playwrights, 2015
- Jeanne Kelly. *How to Build a Professional Digital Profile* Kindle Edition by Bernish, Bernish Communications Associates, LLC; 1st edition, 2012
- Tesla, Nikola. My Inventions by Ingram Short title, 2011
- Yousafzai, Malala. I Am Malala The Girl Who Stood Up for Education and Was Shot by the Taliban, Christina Lamb, Little Brown, 2013

E-Resources:

- For Readers' Theatre: https://www.youtube.com/watch?v=JaLQJt8orSw&t=469s(the link to the performance; refer scripts by Aaron Sheperd)
- http://BBC learn English.com
- Nelson Mandela with Larry King
- Interviews: http://edition.cnn.com/TRANSCRIPTS/0005/16/lkl.00.html

CO	URSE NA	ME	Object Oriented	l Progran	nming with C++	L	Τ	T P					
CO	URSE CO	DDE		XMT403		3	1	0	4				
С	Р	Α				L	Т	Р	Н				
4	0	0				3	1	0	4				
PRERE	QUISITE		C programme						1				
On succ	essful com	pletion of	f this course, the stu	idents wil	l be able to:								
		CO	URSE OUTCOME	S		DOMA	IN I	LEVI	EL				
CO 1	Define b	asic conce	epts on object-oriente	ed program	nming.	Cognitiv	ve 1	Understa	nding				
CO 2	Explain Inheritan	the types ce for real	of inheritances and A l time problem.	Applying v	various levels of	Cognitiv	ve ¹	Understa	nding				
CO3Explain the operator Overloading function.CognitiveUnderstan													
CO 4	CO 4Demonstrate the concept of Polymorphism.CognitiveUndersta												
CO 5	Explain	the file co	ncept and exception	handlings	in C++	Cognitiv	ve 1	Understa	nding				
UNIT 1	INTRO	DUCTIO	N TO C++		I		I	9+	3				
Key cond	cepts of Ob	ject-Orier	nted Programming –	Object Or	iented Languages -	- I/O in C+	-+ - C+	+ Declar	ations.				
Control	Structures:	- Decisi	on Making and Stat	ements: I	f, else ,jump, goto	o, break, o	continu	e, Switc	h case				
statemen	ts - Loops	in C++ : I	For, While, Do - Fun	ctions in (C++ - Inline function	ons – Func	tion O	verloadi	ng.				
UNIT 2	CLASSI	ES AND (DBJECTS					9+	3				
Declaring	g Objects -	- Defining	g Member Functions	– Static N	lember variables an	nd functio	ns - art	ray of ob	jects –				
friend fu	$\frac{1}{1}$	Jverloadin	ig member functions	- classes	– Constructor and	destructor	with s	tatic mer	nbers.				
UNIT 3		LOK OV	ERLOADING AND) INHER	ITANCE		Inhani	9 + tomoos Tr	<u>3</u>				
Inheritan	ing unary,	omary op Multile	vel Multiple Hieror	ehal Hyb	id Multi path inh	nversion –	- Inneri Virtual	base Ch	/pes of				
Abstract	Classes	c, munic	ver, muniple, merar	ciiai, 11yu	ilu, wuuti patti illik		v II tuai		15505 -				
UNIT 4	POINT	ERS AND	POLYMORPHISM	М				9+	3				
Declarati	on - Point	er to Clas	s. Object – this point	er – Point	ers to derived class	ses and Ba	se clas	ses - Arr	ravs –				
Characte	ristics – ar	ray of clas	sses – Memory mode	els – new a	and delete operator	s – dynam	ic obje	ct – Bine	ding,				
Polymor	phism and	Virtual Fu	unctions.		*	·	Ū		0				
UNIT 5	FILES							9 +	3				
File strea	am classes	– file mo	des – Sequential Re	ad / Writ	e operations – Bin	ary and A	SCII F	Files – R	andom				
Access C	peration –	Template	s – Exception Handli	ing - String	g-Declaring and I	nitializing	string	objects –	String				
Attributes – Miscellaneous functions.													
	TURE	45	TUTORIAL	15	PRACTICAL	0	ТОТ	AL	60				
Text Boo	ok												
1. Asho	k N Kamtl ation Publ	hane, "Ob	oject-Oriented Progra	amming W	ith ANSI and TUI	RBO C &	C++",	Pearson					
Referen	ce												

1. E. Balagurusamy, OBJECT - ORIENTED PROGRAMMING WITH C++, Tata McGraw Hill Education Private Limited, 2011, fifth edition.

E-References:

https://nptel.ac.in

	COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2		
CO 1	3	2	1	0	0	2	2	2	3	2	0		
CO 2	3	2	1	0	0	2	2	2	3	2	0		
CO 3	3	2	1	0	0	2	2	2	3	2	0		
CO 4	3	2	1	0	0	2	2	2	3	2	0		
CO 5	3	2	1	0	0	2	2	2	3	2	0		
TOTAL	15	10	5	0	0	10	10	10	15	10	0		
SCALED VALUE	3	2	1	0	0	2	2	2	3	2	0		
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation													
1-5→1, 6-10→2, 11-	15→3												

CO	URSE NA	ME		Fourier Se	ries and T	ransforms	L	Т	T P				
CO	URSE CC	DDE			XMT404		3	1	0	4			
С	Р	Α					L	Т	Р	Н			
4	0	0					3	1	0	4			
PRERE	QUISITE	I	Algeb	ora, Trigonon	netry, Diff	erential and Integr	al calculus	1	1	<u> </u>			
On succe	essful com	pletion of	f this co	ourse, the stu	idents wil	l be able to:							
		CO	URSE	OUTCOME	S		DOMAI	N	LEVI	EL			
CO 1	Identify expansio	odd and n of these	even f given f	functions and functions.	l determir	e Fourier series	Cognitiv	ve 🛛	Applying				
CO 2	Determi	ne Half- ra	ange Fo	ourier sine an	d cosine e	xpansions.	Cognitiv	ve L	Jndersta	nding			
CO 3	Demons	t rate the p	the properties of Fourier Transform. Cognitive Understand										
CO 4	Solve the	e linear dif	r differential equations using Laplace transform. Cognitive Applying										
CO 5	Apply Z	-transform	ns to sol	lve the differe	ence equat	ions.	Cognitiv	'e	Apply	ing			
UNIT 1	Fourier	series							9 +	3			
Fourier s	eries- defin	nition - Fo	ourier S	eries expansi	on of perio	odic functions with	n Period 2	π and p	eriod 2a	u – Use			
of odd &	even func	tions in Fo	ourier S	Series.	-			-					
UNIT 2	Half-ran	ige Fourie	er Serie	es					9 +	3			
Half-rang	ge Fourier	Series – de	efinition	n- Developm	ent in Cosi	ne series & in Sine	e series Cha	ange of	interval	- Root			
mean squ	are value	- Parseval	's ident	tity— Harmo	nic analys	is.							
UNIT 3	Fourier	Transfori	ms						9 +	3			
Fourier In Fourier (Shifting, Theorem	ntegral The Cosine & Change o (statemen	eorem (stat Sine Tran f scale, M t only), In	tement sforms lodulati verse o	only), Fourie of elementa on. Example f Fourier Tra	r Transfor ary functions Fourier / nsform, E:	m of a function, Fo ons - Properties o Transform of Deri xamples.	urier Cosir f Fourier 7 vatives. Ex	ne & Sin Fransfo kamples	ne Trans rm: Lir s. Convo	forms. earity, olution			
UNIT 4	Laplace	Transfor	ms		,	•			9 +	3			
Laplace	transform	– Transfo	orms of	Elementary	functions	– Properties of La	place trans	sform -	Transf	orm of			
periodic	functions	- Transfor	rm of l	Derivatives -	Transform	n of integrals- In	verse trans	forms -	- Conve	olution			
theorem -	 Applicat 	ions of La	iplace T	Transforms fo	r solving s	second order differ	ential equa	tions.					
UNIT 5	Z Trans	forms							9 +	3			
Z-transfor	rm – Elem	entary pro	operties	- Inverse Z -	- transform	n – Convolution th	eorem – In	itial an	d Final	value			
theorems	s - Formati	on of diffe	erence of	equations – S	olution of	difference equation	ons. using Z	Z-transf	orm.				
	TURE	45	1	TUTORIAL	15	PRACTICAL	0	ТОТА		60			
Text Boo	ok												
1. Grev	val, B.S., '	Higher Er	ngineer	ing Mathema	tics", $42^{\overline{nd}}$	Edition, Khanna I	Publishers,	New D	elhi (20	17).			

References

- 1. Veerarajan. T, "Engineering Mathematics Volume III", Second reprint, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2012.
- 2. Robert T. Seeley. Fourier Series and Integrals, Dover Publications, New York, 2006.
- 3. Ray Hanna, J. Fourier Series, Transforms and Boundary Value Problems, Dover Publications, New York, 2008.
- 4. Churchill, R.V. and Brown, J.W., "Fourier Series and Boundary Value Problems", Fourth Edition, McGraw Hill Book Co., Singapore (1987).

E-References:

https://nptel.ac.in

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	3	2	0	1	3	3	3	3	3	0	
CO 2	3	2	1	0	0	2	2	2	3	2	0	
CO 3	3	2	1	0	0	2	2	2	3	2	0	
CO 4	3	3	2	0	1	3	3	3	3	3	0	
CO 5	3	3	2	0	1	3	3	3	3	3	0	
TOTAL	15	13	8	0	3	13	13	13	15	13	0	
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
$1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-$	15→3											
CO	URSE NA	ME		Statistics for	or Data S	cience - II	L	Т	Р	C		
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CO	URSE CC	DDE			XMT405		2	1	0	3		
С	Р	Α					L	Т	Р	Н		
2	0	0					2	1	0	3		
PRERE	QUISITE		Bas	sic Statistics								
On succ	essful com	pletion of	f this	course, the stu	dents wil	l be able to:						
		CO	URS	E OUTCOMES	5		DOMAI	N	LEV	EL		
CO 1	Demons	t rate the b	pasics	s of R.			Cognitiv	ve l	Jndersta	inding		
CO 2	Explain	the basic	conce	epts of probabilit	ty.		Cognitiv	ve t	Jndersta	inding		
CO 3	Illustrat	e the disci	rete a	nd continuous ra	andom va	riable.	Cognitiv	ve U	Understanding			
CO 4	Demons distributi	t rate the o ons.	nuous probability	Cognitiv	ve l	Jndersta	inding					
CO 5	Constru data sets.	ct the stat	test for the given	Cognitiv	ve 🛛	Apply	ring					
UNIT 1	R							•	6+	3		
An intro	luction to	R - Data s	truct	ures in R- Data v	visualizati	on with R- Data a	nalysis wit	h R.				
UNIT 2	Probabi	lity Theor	ry						6+	- 3		
Random	Experiment Experimentation Theorem	nt – Samp prem – Ba	ole Sp ve's	ace – Events – Theorem - Appli	Axiomati cations.	c Definition of Pr	obability –	Addit	ion The	orem –		
UNIT 3	Distribu	tion Func	tion						6 +	- 3		
Continuc	ous and Dis	screte Ran	ldom	Variables – Dist	tribution	Function of a Rand	lom Variab	ole – Pr	obabilit	y Mass		
Function	s and Prob	ability De	ensity	Functions – Ch	aracterist	c Functions.						
UNIT 4	Probabi	lity Distri	butio	$\frac{\mathbf{D}\mathbf{D}\mathbf{S}}{\mathbf{D}\mathbf{S}}$	·			<u> </u>	6+	- 3		
Function	ty Distribi s – Discre	itions – R te Probab	ecurr oility	Distribution – H	ips – Mor Binomial	nent Generating F Distribution – Po	unctions – isson Distr	ibution	ant Gen	tinuous		
Probabili	ty Distribı	itions - No	orma	Distribution.					-			
UNIT 5	Inferent	ial statisti	ics						6 +	- 3		
Test hyp	otheses- (Central lin	nit tl	neorem - Confi	dence int	erval- T-test- Ty _l	pe I and I	I error	s- Stude	ent's T		
distributi	on. TUDE	20		TUTODIAL	15	DDACTICAL	0	TOT		15		
		50		TUTORIAL	15	FRACTICAL	U	1017	AL	45		
l ext Boo)K											
1. Jarec	l P Lander	, "R for ev	veryo	ne: Advanced A	nalytics a	and Graphics", Ad	dition Wes	ley, 20	14.			
2. Gupta Delhi	a, S.C. and , 11th Ed,	l Kapoor, 2020.	V.K.	: "Fundamentals	s of Math	ematical Statistics	", Sultan &	: Chanc	l & Son	s, New		
Reference	es											
1. Hasti	1. Hastie, Trevor, et al. "The elements of Statistical Learning", Springer, 2009.											

- 2. Peter Bruce, Andrew Bruce and Peter Gedeck, "Practical Statistics for Data Scientists", 2nd Edition, May 2020.
- 3. Pratap Dangeti, "Statistics for Machine Learning", July 2017.

https://nptel.ac.in

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	2	1	0	0	2	2	2	3	2	0
CO 3	3	2	1	0	0	2	2	2	3	2	0
CO 4	3	2	1	0	0	2	2	2	3	2	0
CO 5	3	3	2	0	1	3	3	3	3	3	0
TOTAL	15	11	6	0	1	11	11	11	15	11	0
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3											

CO	URSE NAMEStatistics for Data Science Lab II using RLTPO													
			Programming											
CO	URSE CC	DDE	XMT406	0	0	2	1							
С	Р	A		L	Т	Р	Н							
1	0	0		0	0	2	1							
PRERE	QUISITE		Basic Statistics											
On succe	Successful completion of this course, the students will be able to:													
		CO	URSE OUTCOMES	DOMAI	N	LEVE	EL							
CO 1	Compar	e the mean	ns using paired T test for the given data sets.	Cognitiv	e	Applyi	ing							
CO 2	Compar	e the mean	ns using unpaired T test for the given data sets.	Cognitiv	e	Apply	ing							
CO 3	Test the	level of si	gnificance using chi – square test.	Cognitiv	e	Analyzing								
CO 4	Analyze two-way	the varian ANOVA.	ce for the given data sets by using One-way and	Cognitiv	e	Analyz	ing							
CO 5	Apply bi	nomial tes	st, run test, and sign test for a given data set.	Cognitiv	e	Applyi	ing							
List of E	xperimen	ts			<u> </u>									
1. C 2. U 3. C 4. O	 Comparing means: Independent sample test and paired t-test. Unpaired T Test. Cross tabulation and Chi-square-test. One-way and two-way ANOVA. 													

5. Binomial test, run test, and sign test.

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	2	1	0	0	2	2	2	3	2	0
CO 3	3	3	3	1	2	3	3	3	3	3	1
CO 4	3	3	3	1	2	3	3	3	3	3	1
CO 5	3	2	1	0	0	2	2	2	3	2	0
TOTAL	15	12	8	2	4	12	12	12	15	12	2
SCALED VALUE	3	3	2	1	1	3	3	3	3	3	1
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
$1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$											

CO	URSE NA	ME	Ved	ic Mathem	atics I	L		Р	С										
CO	URSE CC	DDE		XMT407		1	1		0	2									
С	Р	Α				L	T		Р	Н									
2	0	0				1	1		0	2									
PRERE	QUISITE	I	Number Systems	and Algeb	a					<u> </u>									
On succ	essful com	pletion of	f this course, the s	tudents wi	l be able to:														
		CO	URSE OUTCOM	ES		DOMA	N	Ι	LEVI	EL									
CO 1	Explain	the history	y of Vedic mathem	atics		Cognitiv	ve	Und	lersta	nding									
CO 2	Explain completi	the con ng the who	cept of multiplic	cation and right.	division using	Cognitiv	ve	Und	lersta	nding									
CO 3 Explain the between squaring numbers ending in 5 and squaring numbers near number 50 and manage to simplify algebraic Cognitive Under Cognitive																			
CO 4Identify cube and cube roots, recognize and apply division by 9 and recognize the concept of division by using straight division.CognitiveApple Cognitive																			
CO 5	Demonst with spee	t rate simped and acc	ple arithmetic calc uracy	culations of	HCF and LCM	Cognitiv	/e	Und	lersta	nding									
UNIT 1	Addition	is and Sul	btractions							3+3									
History of by Left t covering of the su	of Vedic M o Right - I Subtractio m - Genera	lathematic Dropping n -Starting al case.	s; Various techniq tens and grouping g complements fror	ues to carry techniques n the middle	out basic operatic ; Various techniqu e of the sum - leavi	ons coverin les to carry ng complet	g Ado y out ments	dition basic s fron	n - Ao c ope n the r	ldition rations middle									
UNIT 2	Multipli	cation and	d Division							3+3									
Multiplic roots; Di near base	ation by sp vision (Div e - Compar	pecific nur vision of I ison of fra	nbers – Multiplicat Double-Digit Num actions.	tion by num bers) - Digi	bers near base - Vo tal Roots - Divisit	erifying and oility tests	swers - Divi	by u ision	se of of nı	digital umbers									
UNIT 3	Square a	and Squar	re Roots							3+3									
Introduct with 5 - 1	tion of squ Different n	ares of nu nethods of	mbers - Difference Squares (General	e of two Squ method, Ba	are numbers - Fir se method, Duplez	nding squar x method) ·	es of Squa	'num are R	bers oots.	ending									
UNIT 4	Cube an	d Cube R	oots		· •					3+3									
Cubes - O	Cube roots	- Cube Ro	oots of Exact Cube	s - General	division.														
UNIT 5	LCM an	d HCF								3+3									
Factorisa	Factorisation Method of LCM and HCF - HCF and LCM of Arithmetic and Algebra.																		
LEC	TURE	15	TUTORIAI	15	PRACTICAL	0	TO	ГAL		30									
Text Boo	ok								1										
1. Vedi	e Mathema	tics, Swar	ni Bharati Krishna	Trithaji, M	otilal Banarsidas,	New Delhi	,1990).											
Referen	ces								References										

- 1. Elements of Vedic Mathematics, Udayan S. Patankar, Sunil M. Patankar, TTU Press, 2018.
- 2. Advanced Vedic Mathematics, Rajesh Kumar Thakur, Rupa Publications, New Delhi, 2019.

http://www.funwithfigures.com/

http://www.youtube.com/watch?v=b3PFjsUgULM&feature=youtu.be

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	2	1	0	0	2	2	2	3	2	0
CO 3	3	2	1	0	0	2	2	2	3	2	0
CO 4	3	3	2	0	1	3	3	3	3	3	0
CO 5	3	2	1	0	0	2	2	2	3	2	0
TOTAL	15	11	6	0	1	11	11	11	15	11	0
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3											

C	ourse	e Name	Introduction to Entrepreneurship Development	L	Т	Р	C			
C	ours	e Code	XUM004	1	0	0	1			
С	Р	Α		L	Т	SS	Н			
1	0	0		1	0	1	1			
Prer	equis	site	Basic skills like critical thinking, creativity, risk-taking,	probl	em-solving, netv	vorking, leade	ership.			
On s	ucces	sful comp	letion of this course, the students will be able to:							
			Course Outcomes	-	Domain	Leve	el			
C01		Understa	nd the concept of Entrepreneurship	(Cognitive	Understa	nding			
CO2	,	Understa	nd about an Entrepreneur	(Cognitive	Understa	nding			
CO3	5	Understa	nd the characteristics of Entrepreneur	(Cognitive	Understa	nding			
CO4		Understa	nd the ways to acquire skills of Entrepreneur	(Cognitive	Understa	nding			
CO5	;	Understa	ndthe concept of Intrepreneurship	Cognitive	Understa	nding				
UNI	T 1	INTROD	UCTION TO ENTREPRENEURSHIP			3+3	6			
Mean in Ec Entro	ning a conon epren	and Conce nic Develo eurship	pt of Entrepreneurship, History of Entrepreneurship Dependent, Myths about Entrepreneurs, Agencies in Entrepre	evelop prene	oment, Role of urship Manager	Entrepreneu ment and Fut	rship ture of			
UNI	Т2	THE EN	TREPRENEUR			3+3	6			
Why Entre Entre	to be eprene epren	come Entr eurial Dec eurial Succ	repreneur, Skills/ Traits required for being an Entreprer ision Process, Skill Gap Analysis, Role Models, Mento cess Stories.	neur, ors an	Creative and D d Support Syste	esign Thinki em,	ng,			
UNI	Т3	CHARA	CTERISTICS OF AN ENTREPRENEUR			3+3	3			
Intro and a Entro Rela betw	ntroduction - Characteristic Features of Successful Indian Entrepreneurs - Differences between an End nd a Manager - Difference between an Entrepreneur and an Intrapreneur - Relationship between the Entrepreneur, Entrepreneurial and Entrepreneurship - Difference between a Scientist, Inventor and En Relationship between Entrepreneur and Entreprise - Difference between Entrepreneur and Enterprise between a Self-employed person and Entrepreneur - Common Myths on Entrepreneur									
UNI	T 4	SKILLS I	FOR AN ENTREPRENEUR			3+	3			
Busi – Cri Finat	ness l itical ncial	Manageme Thinking S Skills – Le	ent Skills - Communication and active listening skills - Skills – Problem Solving Skills – Creative Thinking Sk eadership Skills – Time Management and Organization	Risk- ills – al Ski	taking skills – Customer Serv ills – Technical	Networking vice Skills – Skills	Skills			
UNI	T 5	INTRAPH	RENEURSHIP		3 + 3	3				

What is Intrap	reneurship – U	Jnderstar	nding Int	rapreneu	rship – 7	Types of I	ntrapreneu	urs – Characte	eristics of
Intrapreneurs -	- Examples of	Intapren	neurship	1					1
Lecture	15	Self - S	Study	15			Total		30
Text Book									
1. Jayashree S	uresh, Entrepi	eneurial	Develop	ment, M	argham l	Publicatio	ons.		
References									
Essentials of E	Intrepreneursh	ip and S	mall Bus	iness Ma	anageme	nt (6th Ec	lition) by I	Norman M. S	Scarborough
(Paperback - J	an 13, 2010)								
2. Entrepreneu	rship and Sm	all Busin	ess Mana	agement.	Student	Edition b	v Glencoe	e McGraw-Hi	ill (Hardcover -
Feb 24, 2005)	1			0 ,			5		ζ.
3 Vasant Des	ai Dynamics	of Entren	reneursh	in Devel	onment	Star Publ	lication N	ew Delhi	
J. Vasant Desa	ai, Dynamics (51 Entrep	i cheur sh	ip Devel	opinent,	Star I uo		cw Denn.	
E-References									
1. https://	in.indeed.com	/career-a	dvice/ca	reer-dev	elopmen	t/entrepre	neur-skills	5	
2. https://	www.investo	oedia.cor	n/terms/i	/intrapre	neurship	.asp			
	-	•		CO	s vs PO	S			
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	2	1					1	2	1
CO 2	2	1							1
CO 3	2	1					1		1
CO 4	2	2							1
CO 5	2	2							1
TOTAL	10	7	0	0	0	0	2	2	5
SCALED	2	2	0	0	0	0	1	1	1
VALUE				0			1		•
0 - No Relatio	n, 1 – Low R	elation, 2	2- Mediu	ım Rela	tion, 3- l	High Rela	ation		
$1-5 \rightarrow 1, 6-10$	\rightarrow 2, 11-15 \rightarrow	3							

SEMESTER V

CO	URSE NA	ME	Abstract AlgebraLTPC									
CO	URSE CC	DDE	XMT501	3	1	0	4					
С	Р	Α		L	Т	Р	Н					
4	0	0		3	1	0	4					
PRERE	QUISITE		Algebra									
On succ	essful com	pletion of	this course, the students will be able to:									
		CO	URSE OUTCOMES	DOMAI	N	LEVI	EL					
CO 1	Explain	the basics	of subgroup and cyclic subgroups.	Cognitiv	e l	Jndersta	nding					
CO 2	Explain permutat	the signifion groups	icance of the notions of quotient groups and s.	Cognitiv	e l	Jndersta	nding					
CO 3Demonstrate the fundamental concepts in ring theory such as of the ideals, quotient rings, integral domains, and fields.CognitiveUnderstand												
CO 4	codeDemonstrate the concepts of vector spaces, subspaces, bases, dimension and their properties with examples.CognitiveUnderstanding											
CO 5	Identify transform	the e nations.	igenvalues and eigenvectors of linear	Cognitiv	e	Apply	ing					
UNIT 1						9 +	3					
an eleme Necessar subgroup Cyclic su – left co Fermat's	 ip: Necession int – Centration iy and sufficient ibgroups: sets and right theorem 	ary and su re of a gro ficient cor Subgroup ght cosets	bup – Normalizer and Centralizer, Product of tradition for HK to be of a cyclic group a subgroup s, generators of a cyclic group – Number of generators of a group by cosets – Lagrange	- Order of wo subgrou oup - Inter erators of a 2's theorem	the Gro ups – (section cyclic – Eule	Drder of Drder of a and ur group – er's theo	HK – ion of cosets					
UNIT 2						9+	3					
Normal homomo groups.	subgroup rphism – 1	s: Quotien somorphi	nt groups – Group Homomorphism – Canonical sm – Automorphism - Inner Automorphism – C	l Homomo Cayley's Th	rphism eorem	– Kern – Perm	el of a utation					
UNIT 3						9 +	3					
Rings: I – Sub rin prime Id Homomore Polynom rational f UNIT 4 Vector S Homomore Span of	Definition a lgs – Sub leals – Ch orphism – ial rings – field – Eier Space: Deforphism. a Set: L	ind examp fields – Ic aracteristi Fundamen Division a nstein's cri finition an inear Inde	les – Types of rings – Elementary properties of a leals – Left ideal – Right ideal – Principal ideal c of a ring – PID – UFD – Homomorphisms ntal theorem of Homomorphism – Field of que algorithm – Polynomial rings over a UFD – Gaus iterion. d Examples – Subspaces – Linear Transformat ependence – Basis and Dimension – Rank an	a ring – Int – quotient – Isomorj otients of a ss lemma – tion – Fund d Nullity -	egral E t ring – phism an Inte Polync dament ament	Oomain - - Maxim – Kerne gral dor omials o <u>9 +</u> al Theo: ix and	- Field hal and el of a main - ver the <u>3</u> rem of Linear					

UNIT	5							9+3				
Inner Product Space: Definition and Examples – Orthogonality – Orthogonal Complement – Gram Schmidt orthogonalization process												
Matri	ces. Flementar	v transformat	ion _ Inverse _	Rank _ Te	est for consistency	– Solving	. Linear Fau	uations -				
Cavle	Cavley Hamilton theorem – Uses of Cavley Hamilton theorem – Inverse and power of a matrix. Eigenvalues											
and E	and Eigenvectors.											
LI	ECTURE	45	TUTORIAL	15	PRACTICAL	0	TOTAL	60				
Text l	Book	1	I	1	1							
1. He	erstein .I.N – T	opics in Alge	bra, Vikas Publ	ishing hou	use Pvt. Ltd., 1975	, New Del	lhi.					
Refer	ences			C		·						
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3. Jo	hn B. Fraleigh	, "A First Cou	rse in Abstract	Algebra",	, 7th Ed., Pearson,	2002.						
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5. M	urugan. M, "A	A First Cours	se in Linear A	lgebra an	d Boolean Algeb	ra", Muth	ali Publishi	ng House,				
Cł	ennai. 2018.			0	8	,		0)				
	_ • • • • • •											
E-Ref	erences											
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2.	https://francis	scan.smartcata	alogiq.com/en/2	021-2022	/Undergraduate-							
	Catalog/Cour	rses/MTH- Ma	athematics-Cou	rse-Descri	iptions/300							
3.	http://catalog	g.yale.edu/ycp	s/courses/math/									
4.	4. <u>https://www.princeton.edu/academics/area-of-study/mathematics</u>											
5.	https://lsa.um	nich.edu/math	/undergraduates	/undergra	duate-math-course	s/500-leve	<u>el-</u>					
	math- course	<u>s.html</u>										

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	2	1	0	0	2	2	2	3	2	0
CO 3	3	2	1	0	0	2	2	2	3	2	0
CO 4	3	2	1	0	0	2	2	2	3	2	0
CO 5	3	3	2	0	1	3	3	3	3	3	0
TOTAL	15	11	6	0	1	11	11	11	15	11	0
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3											

CO	URSE NA	ME	L	T		Р	С			
CO	URSE CC	DDE	XMT502	3	1		0	4		
С	P	A		L	T		Р	Н		
4	0	0		3	1		0	4		
PRERE	QUISITE		Number Systems		<u> </u>			L		
On succ	essful com	pletion of	this course, the students will be able to:							
		CO	URSE OUTCOMES	DOMAI	N	L	EVE	EL		
CO 1	Summar	rize the dif	ferent properties of the real line R.	Cognitiv	ve	Und	ersta	nding		
CO 2	Demonst monoton bounded	trate bou ic sequences sequences	inded, convergent, divergent, Cauchy, and es, and calculate limit superior, limit inferior of s.	Cognitiv	ersta	nding				
CO 3	Demons	trate the b	asic definition and topology of metric spaces.	Cognitiv	'e	Und	ersta	nding		
CO 4	Explain Compact	the concentration the concentration the concentration of the concentrati	cepts of Connectedness, Completeness and	Cognitiv	ve 🛛	Unde	ersta	nding		
CO 5	Demons	trate the c	onsequences of mean value theorems.	Cognitiv	'e	Und	ersta	nding		
UNIT 1			I				9+3	3		
Real Nur bounds, i supremur Element	mber syste maximum m- Absolu s of point	em: The fr element, 1 te values - set Topol	eld axioms, the order axioms, the rational number east upper bound (supremum)- The completeness The triangle inequality- the Cauchy-Schwarz's i logy: Euclidean space -Open sets and closed set	ers, the irra is axiom- s nequality. s-Bolzano-	tional ome	l num prope erstras	bers, erties ss the	upper of the		
UNIT 2			em-covernigs Endelor covernig theorem.				9+	3		
Sequenc Monoton sequence Series: 1 Alternati	es: Bound ic sequence, upper and Infinite se ng series.	led, Conve ces. Cauch d lower lir ries –nth	ergent, Divergent and oscillating sequences, All by's first limit Theorem, Cauchy's second limit T nit of sequences. term test-Comparison text- Linear Comparison	lgebra of l Theorem, s on test-Roo	imits ubsec ot tes	- Be quenc st- In	ehavi es, C tegra	our of Cauchy 1 test-		
UNIT 3							9+3	3		
Metric S Continue continue	paces: Me ous funct us in a met	etric Space ions on r tric space	es - Limit in Metric Spaces- point set topology in netric spaces: Functions continuous at a poir Discontinuous function on R ₁	metric spa nt on the r	ices. real l	ine -	Fun	octions		
UNIT 4		i					9+3	3		
Connect - Comple - Uniform	edness, Co ete metric s n continuit	o mpletene spaces – C ty	ess and Compactness: - Connectedness - Bound ontinuous functions on compact metric spaces -C	led sets and continuity c	1 tota of the	lly bo inver	ounde se fu	ed sets nction		
UNIT 5	<u> </u>	D			1		9+3	3		
Riemann	Riemann Integral: Existence of the Riemann integral. Derivatives-Rolle's theorem - Fundamental theorem of									

Ca	Calculus –Mean value theorem- Cauchy's Mean Value theorem-Taylor's Theorem.													
	LECTURE	45	TUTORIAL	15	PRACTICAL	0	TOTAL	60						
Te	ext Book													
1.	Tom M. Apostol - Mathematical Analysis, II Edition, Narosa Publishing House, New Delhi (Unit I), 1997.													
Re	leferences													
1. 2. 3. 4. 5.	 Arumugam. S. and Thangapandi Issac, "Sequences and Series", New Gamma, Publishing House, Palayamkottai - 627 002, 1997. Goldberg. R. "Methods of Real Analysis", Oxford and IBH Publishing Co., New Delhi (2000). Arumugam and Issac, "Modern Analysis", New Publishing House, 2017. Malik S.C and Savitha Arora, "Mathematical Analysis", 1991, Wiley Eastern Limited New Delhi. Viswanath Naik, K, "Real Analysis", Emerald Publishers, Chennai. 													
E-	References													
1.	https://nptel.ac.ir	1												
2.	https://www.goog	gle.com/url?s	a=t&source=we	<u>b&rct=j&</u>	url=https://alansin	yal.files.w	ordpress.							
	<u>c om/2012/08/me</u>	ethod-of-real-	analysis.pdf&vo	ed=2ahUH	<u> KEwiHw4Ozusr-</u>									
	<u>AhUdwjgGHQsa</u>	aBSYQFnoE(CBsQAQ&usg=	AOvVaw	0V9zo2qyZvq3sS	2eEWAbk	xY							

COs VS POs													
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2		
CO 1	3	2	1	0	0	2	2	2	3	2	0		
CO 2	3	2	1	0	0	2	2	2	3	2	0		
CO 3	3	2	1	0	0	2	2	2	3	2	0		
CO 4	3	2	1	0	0	2	2	2	3	2	0		
CO 5	3	2	1	0	0	2	2	2	3	2	0		
TOTAL	15	10	5	0	0	10	10	10	15	10	0		
SCALED VALUE	3	2	1	0	0	2	2	2	3	2	0		
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation													
1-5→1, 6-10→2, 11-	1-5→1, 6-10→2, 11-15→3												

CO	URSE NA	ME		Nui	mber The	ory	L	T]	P	С		
CO	URSE CO	DE		XMT503 3 1 0									
С	Р	Α					L	P	Н				
4	0	0					3	1		0	4		
PRERE	QUISITE		Nur	nber Systems						I			
On succe	essful com	pletion of	f this	course, the stu	idents wil	l be able to:							
		CO	URS	E OUTCOME	S		DOMA	IN	L	EVE	L		
CO 1	Demonst integers b	t rate an by applyin	under Ig prin	standing of th nciples of math	ne basic p ematical i	properties of the nduction.	Cognitiv	ve	Unde	erstar	ıding		
CO 2	Solve th algorithm	ne given n.	Diop	phantine Equat	tion by	using Euclidean	Cognitiv	ve	Aŗ	oplyi	ng		
CO 3	Demonst	t rate the f	netic.	Cognitiv	ve	Unde	erstar	ıding					
CO 4	Explain	the basic p		Cognitiv	ve	Unde	erstar	ıding					
CO 5	ve Understandin												
UNIT 1	,									9+	3		
Peano's A	Axiom - M	athematic	al Ind	luction - The B	inomial T	neorem - Early Nu	mber Theo	ory.					
UNIT 2										9+	3		
Divisibil	ity Theory	in Integer	s - Tł	ne Division Alg	orithm - T	he g.c.d Euclide	an Algorit	.hm - 🛛	The D	ioph	antine		
Equation	ax + by =	c.								0			
UNIT 3	- 1 41 : - D:	4	- T1-		Γ1	£ 4	-: f [9+ Th	<u>3</u>		
Conjectu	id their Dis	stributions	s - 1n	e lundamental	I neorem c	arithmetic - The	sieve of E	ratost	nenes	- I N	eGuii		
UNIT 4										9+	3		
The Theo	ory of Con	gruence -	Basic	Properties of C	Congruenc	e - Special Divisib	oility test -	Linea	r Con	grue	nce		
Prime mo	odulus- Po	wer residu	ies.	1	U	1	5			U			
UNIT 5										9+	3		
Fermat's '	Theorem -	Fermat's	factor	rization method	- The Lit	le theorem - Wilso	on's theore	m.					
LECTURE 45 TUTORIAL 15 PRACTICAL 0 TOTAL										(60		
Text Boo	Text Book												
1. Elem	. Elementary Number Theory, David M Burton, McGraw Hill Education, Seventh edition, 2017.												
Reference	References												
1. Tom. 1 2. Ivan N 3. Kumar	 Tom. M. Apostol, Introduction to Analytic Number Theory, Springer, New York, 1976. Ivan Nivan and H. Zuckerman - An Introduction to theory of Numbers. Kumaravelu. S and Susheela Kumaravelu – Elements of Number Theory, Nagercoil, 2002. 												

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courses.html

- 2. <u>http://collegecatalog.uchicago.edu/thecollege/mathematics/#courseinventory</u>
- 3. https://www.princeton.edu/academics/area-of-study/mathematics

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2	
CO 1	3	2	1	0	0	2	2	2	3	2	0	
CO 2	3	3	2	0	1	3	3	3	3	3	0	
CO 3	3	2	1	0	0	2	2	2	3	2	0	
CO 4	3	2	1	0	0	2	2	2	3	2	0	
CO 5	3	2	1	0	0	2	2	2	3	2	0	
TOTAL	15	11	6	0	1	11	11	11	15	11	0	
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
1-5→1, 6-10→2, 11-15→3												

CO	URSE NA	ME	Gr	aph Theo	ory	L	Τ]	P	С			
CO	URSE CO	DE	2	XMT504A	L	3	1	()	4			
С	Р	Α				L	Т	1	2	Н			
4	0	0				3	1)	4			
PREREC	QUISITE		Algebra										
On succe	essful com	pletion of	this course, the stu	dents wil	l be able to:								
		CO	URSE OUTCOME	S		DOMA	IN	L	EVE	L			
CO 1	Explain	the fundar	nental concepts in g	aph theor	y.	Cognitiv	ve	Unde	rstar	ıding			
CO 2	Compar	e Eulerian	and Hamiltonian gra	aphs.		Cognitiv	ve	Unde	rstar	ıding			
CO 3	Relate g	raph with	matrix.	natrix.						ıding			
CO 4Utilize Euler formula to obtain planar graphs.CognitiveApplyingCO 5Euplein on elegative for vertex colouringCognitiveUp to the line													
CO 5 Explain an algorithm for vertex colouring. Cognitive Understanding													
UNIT 1 9+3													
Basics: (Basics: Graphs – Pictorial representation – Subgroups – Isomorphism and degrees – Walks and connected												
graphs –	Cycles in	graphs – C	Cut-vertices and cut-	edges.									
UNIT 2									9+3	3			
Eulerian	and Ham	niltonian (Graphs: Eulerian gr	aphs – Fl	eury's algorithm –	Hamilton	ian gra	phs –	- we	ighted			
UNIT 3									9+3	3			
Bipartite	Graphs a	and Matri	ces: Bipartite graph	s – Marria	ge problem – Tree	es – Conne	ctor pr	oblen	n – N	Matrix			
represent	ations – V	ector spac	es associated with g	raphs $-C_{2}$	ycle space – cut-se	t space.							
UNIT 4		~ 1	E 1 0 1	D1			~1		9+3	<u>}</u>			
Planar G	aphs: Pla	anar Grapl	ns – Euler formula –	Platonic s	solids – Dual of a p	olane graph	n – Cha	aracte	rızat	10n of			
UNIT 5	•								9+3	3			
Colourin	gs: Vertex	colouring	g – Edge colouring –	An algori	thm for vertex col	ouring.							
LEC	LECTURE45TUTORIAL15PRACTICAL0TOTAL60												
Text Book													
 Chou "An i Pvt. I 	 Choudum.S.A. – A First Course in Graph Theory, Macmillan India Limited, 1987 "An invitation to Graph theory", Dr. S. Arumugam & S. Ramachandran, - SCITECH publications (India) Pvt. Ltd., Chennai, 2006. 												
Referenc	es												
 Graph Hall of Introc 2004. 	 Graphs Theory with Applications to Engineering and Computer Science –Narsingh Deo, Prentice-Hall of India Private Ltd, 1974. Introduction to Graph Theory – Gary Chartrand and Ping Zhang, Tata McGraw-Hill Edition, 2004 												

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- 4. Murugan.M Introduction to Graph Theory, Muthali Publishing House, Chennai, 2005.

- 1. https://archive.nptel.ac.in/courses/111/106/111106102/
- 2. <u>https://www.youtube.com/watch?v=sWsXBY19o8I</u>
- 3. https://www.youtube.com/watch?v=3VeQhNF5-rE

COs VS POs													
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2		
CO 1	3	2	1	0	0	2	2	2	3	2	0		
CO 2	3	2	1	0	0	2	2	2	3	2	0		
CO 3	3	2	1	0	0	2	2	2	3	2	0		
CO 4	3	3	2	0	1	3	3	3	3	3	0		
CO 5	3	2	1	0	0	2	2	2	3	2	0		
TOTAL	15	11	6	0	1	11	11	11	15	11	0		
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0		
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation													
1-5→1, 6-10→2, 11-	1-5→1, 6-10→2, 11-15→3												

CO	COURSE NAMEMathematical ModelingLTPCCOURSE CODEXMT504B3104												
CO	URSE CC	DE		2	KMT504	B	3	1	0	4			
С	Р	Α					L	Т	Р	Н			
4	0	0					3	1	0	4			
PRERE	QUISITE		Differentia	l Calcul	us		I						
On succ	essful com	pletion of	this course	, the stu	dents wi	ll be able to:							
		CO	URSE OUT	COME	S		DOMA	IN	LEV	EL			
CO 1	Compar equation	e models ns of first	that can be co order under s	onstruct study	ed by ord	inary differential	Cognitiv	ve	Apply	ing			
CO 2	Utilize c econom	ompartme	nt models to edicine	solve th	ne problei	ns involved in	Cognitiv	ve 🛛	Apply	ing			
CO 3	CO 3Analyze mathematical models that can be developed by second order linear differential equationsCognitiveAnalyzingCO 4Apply linear difference equation to solve problems in CO 4CognitiveApplying												
CO 4	O 4Apply linear difference equation to solve problems in finance and economicsCognitiveApplyingO 5Identify the solutions of the given problems that can be modelled \overline{a} is the solution of the given problems that can be modelled \overline{a} is the solution of the given problems that can be modelled												
CO 5	O 5 Identify the solutions of the given problems that can be modelled Cognitive Applying through graphs												
UNIT 1	Mathem	atical Mo	deling						9 +	3			
Simple s	ituations r	equiring n	nathematical	modeli	ng- Tech	nique of mathema	tical mode	els - Cl	lassifica	tion of			
mathema	tical mode	ls - Chara	cteristics of 1	mathem	atical mo	dels- Mathematical	lmodeling	throug	h algebr	a.			
UNIT 2	Mathem	atical Mo	deling throu	ugh diff	erential	equations			9+	3			
Linear G	rowthand	Decay Mo	dels - Non-L	linear gr	owth and	decay models - Co	ompartmer	it mode	ls.				
UNIT 3	Mathem	atical Mo	deling, thro	ugh sys	tem of O	rdinary differenti	al equatio	ns of	9+	3			
	first ord	er											
Mathema	atical mode	eling in po	opulation dy	namics -	– Mather	natical modeling o	f epidemic	es throu	ıgh syst	ems of			
ordinary	differentia	l equation	s – Mathema	atical mo	odels Mee	licine.							
UNIT 4	Introduc	ction to di	fference equ	iations				1:00	9+	3			
The need	for mathe	matical m	odeling throu	ugh diffe	erence eq	uation – basic theo	ry of linea	r differ	ence equ	lations			
With cons		cients.		h diff						2			
UNII 5		atical Nio	deling throu	ign airr	erence ed	i 1 C N	<i>I</i> 41	.1 1	9+	3			
through	Mathematical nullightrough difference equations in economics and finance - Mathematical modeling through difference equations in population dynamics and genetics.												
LEC	LECTURE45TUTORIAL15PRACTICAL0TOTAL60												
Text Boo	ok												
1. "Mat	hematical	Modelling	g", J N Kapı	ur, New	Age Inte	ernational publishe	rs, Reprint	t 2018.					
Unit I	Chapter: 1	Se	ctions: 1.1 –	1.6 (Pag	ges $1 - 20$))							
Unit II	Chapter: 2	& 3 Se	ctions: 2.1 –	2.4 (Pag	$\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$	2) &							
	it II Chapter: 2 & 3 Sections: $2.1 - 2.4$ (Pages $30 - 42$) & Sections: $3.1 - 3.2$, 3.5 (Pages $53 - 62$ & $69 - 72$)												

Un	it III Chapter: 4	Sections: 4.1 – 4.3 (Pages 76 – 93)
Un	it IV Chapter: 5	Sections: 5.1 – 5.2 (Pages 96 – 105)
Un	it V Chapter: 5	Sections: 5.3 – 5.5 (Pages 106 – 121)
Re	ferences	
1.	Mathematical Mo	deling by Bimal K. Mishra and Dipak K.Satpathi. Ane Books Pvt.Ltd (1 January
	2009)	
2.	Mathematical Mo	deling Models, Analysis and Applications, by Sandip Banerjee, CRCPress, Taylor &
	Francis group, 202	14
3.	Mathematical Mo	deling applications with Geogebra by Jonas Hall & ThomasLigefjard, John Wiley
	& Sons, 2017	

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- 2. <u>https://www.youtube.com/watch?v=AccTsyDtV_8</u>

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2	
CO 1	3	3	2	0	1	3	3	3	3	3	0	
CO 2	3	3	2	0	1	3	3	3	3	3	0	
CO 3	3	3	3	1	2	3	3	3	3	3	1	
CO 4	3	3	2	0	1	3	3	3	3	3	0	
CO 5	3	3	2	0	1	3	3	3	3	3	0	
TOTAL	15	15	11	1	6	15	15	15	15	15	1	
SCALED VALUE	3	3	3	1	2	3	3	3	3	3	1	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
1-5→1, 6-10→2, 11-	15→3											

CO	URSE NA	L	Т	Р	С								
CO	URSE CC	DE		C	3	1	0	4					
С	Р	Α					L	Т	Р	Н			
4	0	0					3	1	0	4			
PRERE	QUISITE		Alg	ebra and Numb	ber system	S							
On succ	essful com	pletion of	f this	course, the stu	idents wi	l be able to:							
		CO	URS	E OUTCOME	S		DOMAI	N	LEV	EL			
CO 1	CO1Demonstrate to recognize and use of MATLAB.CognitiveUnderstan												
CO 2Apply a top-down, modular, and systematic approach to design, write, test, and debug sequential MATLAB programs to solve numerical problems.CognitiveApplying													
CO 3Apply curve fitting and construct polynomials for a given set of data points or given functions using MATLAB.CognitiveApplying													
CO4 Identify numerical solutions of algebraic and transcendental equations by using bisection method and Newton's Method with MATLAB Cognitive Applying													
CO 5	Solve or Runge-K	linary diff utta methe	ferent ods w	ial equations motions motion with MATLAB.	umerically	using Euler and	Cognitiv	ve	Apply	ving			
UNIT 1									9 -	- 3			
MATLA	B Environ	ment: Get	ting S	Started – Solvin	ng Probler	ns in MATLAB –	Saving you	ır wor	ks – Pre	defined			
MATLA	B Function	ns – Usin	g Pre	defined Function	ons – Ma	nipulating Matrice	s – Comp	utation	al Limi	tations-			
Special V	alues and	Functions	5.							_			
UNIT 2	T (1 (·	D '	• 1 D1 //	·	D' ' I N		1	9	- 3			
Plotting:	Introducti	on to $1 W$	0-D1r	nensional Plott	ing – Thr	ee-Dimensional Pl	lotting – E	diting	Plots fr	om the			
with Tw	r – Creatir Voriables	ig Piols Ir	om in Functi	ie workshop w	indow. Pr st level Co	ogramming in MA	I LAB: In	roduci	.10n – Pr	oblems			
		s – mput/i	unci	ions – Statemen		nitor Structures.			0	_ 3			
Numeric	l al Technia	ues: Intro	Inctio	n – Curve Fitti	ng. Linear	and Polynomial R.	erression	Ileine	the Inte	J ractive			
Fitting T	ools – Nur	nerical Int	tegrat	ion – Numerica	al Differer	tiation.	egression	USIIIg	, the file	luctive			
UNIT 4			<u> </u>						9 -	- 3			
Curve Fi	tting – Fitti	ing Linear	and	parabolic curve	s by the m	ethod of least squa	res princip	les- So	lving al	gebraic			
and trans	cendental	equations-	-Bise	ction method, fa	alse positi	on method and Nev	wton Raph	son me	ethod – S	Solving			
simultan	simultaneous algebraic equations – Gauss-Seidel method – Gauss elimination method.												
UNIT 5									9 -	- 3			
Interpolat	tion – Nev	vton's for	ward	and backward	differenc	e formulae – Lagr	ange's inte	erpolat	ion form	nula –			
Numeric	al integrati	ons using	Trap	ezoidal and Sin	npson's or	e – third rules – so	lution of O	DE's –	- Euler n	nethod			
and Run	ge-Kutta fo	ourth orde	r met	hod.	1=		0	TOT	A T	(0)			
LEC	TURE	45		TUTORIAL	15	PRACTICAL	U	TOT	AL	60			

Text Book

Numerical methods in Science and Engineering, M.K. Venkatraman, National Publisher Company, Fifth Edition, 2001 (For Units IV and V). UNIT – I : Chapter 2&3 of [1] UNIT – II : Chapter 4&5 of [1] UNIT – III : Chapter 8 of [1] UNIT – IV : Chapter 1, Sections 1.7-1.8, Chapter 3, Sections 2, 4 and 5, Chapter 4,

Sections 2, 6 of [2] UNIT - V : Chapter 6, Sections 3 & 4, Chapter 8 Section 4, Chapter 9 Sections 8 & 10,

Chapter 11 Sections 10 & 16 of [2].

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Computer oriented numerical methods, Rajaraman, Prentice-Hall of India, 1971.

E-References

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COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	2	1	0	0	2	2	2	3	2	0	
CO 2	3	3	2	0	1	3	3	3	3	3	0	
CO 3	3	3	2	0	1	3	3	3	3	3	0	
CO 4	3	3	2	0	1	3	3	3	3	3	0	
CO 5	3	3	2	0	1	3	3	3	3	3	0	
TOTAL	15	14	9	0	4	14	14	14	15	14	0	
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3												

COURSE NAMEDiscrete MathematicsLTPOCOURSE CODEXMT504D3104											
CO	URSE CC	DDE)	3	1	0	4			
С	Р	Α					L	T	Р	Н	
4	0	0					3	1	0	4	
PREREC	QUISITE		Alge	bra and Numb	er System	15		<u> </u>			
On succe	essful com	pletion of	f this c	course, the stu	idents wil	l be able to:					
		CO	URSE	COUTCOME	S		DOMAI	N	LEV	EL	
CO 1	Utilize s sentences	tandard no s for logic:	otation al exp	of mathemat ressions and vi	ical logic ice-versa.	to write English	Cognitiv	/e	Apply	ing	
CO 2	Explain	the algebra	aic str	ucture of grou	ps.		Cognitiv	/e l	Jndersta	nding	
CO 3 Simplify and prove Boolean expressions. Cognitive Analyzing											
CO 4 Construct non-deterministic finite state machine. Cognitive Applying											
CO 5 Demonstrate the ability to convert numerals into various number systems. Cognitive Understanding											
UNIT 1								I	9+	3	
Mathem Statemen Equivale	atical log t Formula nce of forr	ic: Staten and Truth nulae - Du	nent a n Table uality I	nd Notation - e – Conditiona Laws - Normal	- Connect al and Bic l forms.	tives - Negation onditional - Well of	- Conjunc lefined for	tion - mulae	Disjunc - Tautol	tions - ogies -	
UNIT 2			ý						9+	3	
Algebrai	c Structu	res: Group	ps and	Monoids - Sir	nple Prop	erties - Group Cod	les.				
UNIT 3 Lattices	and Bool	ean Alge	hra• I	attices and P	osets - Pi	conerties of Lattic	es - Sneci	al I atti	9+	<u>3</u> oolean	
Algebra -	Gating N	etworks -	Minin	hal sums of Pro	oducts - K	arnaugh maps.	es - speer	ui Latti	UU3 D	oorean	
UNIT 4	Ŭ					<u> </u>			9 +	3	
Languag	es: Finite	State Mad	chines	Language - T	The Set Tl	neory and Strings	- Finite St	ate Ma	chine -	A first	
encounter	r - Finite S	state mach	nne - a	Second encou	unter.				0	2	
Number	system an	d codes: I	Decim	al, Binary, Oc	tal, Hexad	ecimal - Conversi	on from on	e to and	+ 9 other - E	3 Binary	
addition,	subtractio	on multipli	ication	and division	- BCD - V	Weighted excess ti	me - Gray	Code -	ASCII	code,	
Error De	Error Detecting Code.										
	LECTURE 45 TUTORIAL 15 PRACTICAL 0 TOTAL 60										
Text Boo	Text Book										
1. Trem McG	bley and N raw Hill, N	/lanohar - New Delhi	Discrete) 35^{th}	ete Mathematic reprint 2008.	cal structu	res with applicatio	n to Com	puter S	cience,	(Tata	
Reference	es										
1. K	oleman an	d Bushy-	Discre	ete Mathematic	cal Structu	ares, Prentice Hall	of India, N	lew Del	lhi- 2002	2.	

- 2. "Discrete Mathematics" by Dr. M.K.Venkatraman, Dr.N.Sridharan, N.Chandrasekeran, the National Publishing Company, 2003.
- 3. Ralph P. Grumaldi Pearson Edelen Discrete and Combinational Mathematics an Applied Introduction (IV Edn.). 1998.
- 4. Maluino A and Leech Digital Principles and Application, Mcgraw Hill, 2011.

- *1.* https://www.cst.cam.ac.uk/teaching/2021/DiscMath [University of Cambridge]
- 2. https://explorecourses.stanford.edu/search?q=CS157 [Stanford]

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2	
CO 1	3	3	2	0	1	3	3	3	3	3	0	
CO 2	3	2	1	0	0	2	2	2	3	2	0	
CO 3	3	3	3	1	2	3	3	3	3	3	1	
CO 4	3	3	2	0	1	3	3	3	3	3	0	
CO 5	3	2	1	0	0	2	2	2	3	2	0	
TOTAL	15	13	9	1	4	13	13	13	15	13	1	
SCALED VALUE	3	3	2	1	1	3	3	3	3	3	1	
0 - No Relation, 1 –	0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1-5→1, 6-10→2, 11-15→3												

CO	lathema	atics	- II				L		Т	P		С						
CO	URSE CO	DE			2	XMT50	5					1		1	0		2	
С	Р	Α										L		Т	P		Н	
2	0	0										1		1	0		2	
PREREC	QUISITE		Alg	ebra and Nu	mbe	er Systei	ns											
On succe	essful com	pletion of	f this	course, the	stu	dents w	ill be	e able	e to:									
		CO	URS	E OUTCON	AES	5					D	OMA	AIN	[LE	VE	L	
CO 1	Solve the	linear eq	uatio	ns in two var	riabl	les faste	r and	l with	n ease	e.	C	ognit	tive		App	Applying		
CO 2	Utilize v Polynom	vertical an ials.	nd cr	osswise tecl	hnic	jue for	mul	tiplic	ation	of	C	ognit	tive		App	olyiı	ng	
CO 3	Explain	the Introd	uction	n and history	of	Matrices	and	Dete	rmina	ants	C	ognit	tive	J	Under	stan	ding	
CO 4	O 4 Explain different forms of straight lines.											ognit	tive	J	Jnder	stan	ding	
CO 5	Solve system of simultaneous linear equations with matrices fast and with ease.											ognit	tive		Арр	olyiı	ng	
UNIT 1	NIT 1 Solution of linear equations													•		3	+3	
Introduct	ion of simj	ple equati	on - S	Solutions of s	simp	ole equat	tions	- So	lutior	ns of	line	ar eq	uati	ons i	n two	var	iables	
- Practica	l applicati	on of line	ar equ	uations in tw	o va	ariables.												
UNIT 2	Factoriza	ation														3	+3	
Factoriza	tion of Qu	adratics -	cubic	e polynomial	s, h	omogen	eous	expr	ressio	ns o	f the	seco	nd	degre	e –			
Solving	Quadratics	by calcu	ilus a	and many ot	her	special	tech	nıqu	es -	Mult	iplic	cation	ı of	Poly	/nomi	als	using	
vertically	and cross	wise techi	nique	•												2	1.2	
UNIT 3	vealc M	atrix Alg	ebra Iotrio	as and Datar		onta M	[atmi			atama	ina	ta of	thi	nd and	don I	3	+ 3	
Matrices			Tauro	es and Deter	111111		laun	cs al	lu De	etern	ma	115 01	un		101 - 1	nve		
UNIT 4	Vedic Ge	eometrv														3	+3	
Different	forms of s	traight lin	es - T	he Triangle -	- Th	e Cvclic	Oua	drila	teral.	Sau	ares	and	the	Circle	e - Ge	ome	etrical	
construct	ions - Trar	sformatio	on of	simple shape	es.)	•		,	- 1-		,						
UNIT 5	Solution	of linear	simu	ltaneous eq	uati	ions										3	+3	
Simultan	eous Equa	tion with	two V	/ariables - Si	imu	ltaneous	Equ	ation	n with	1 3 V	aria	bles t	by d	letern	ninant	t me	thod.	
LEC	LECTURE 15 TUTORIAL 15 PRACTICA									AL		0]]	ΓΟΤΑ	AL		30	
Text Boo	ext Book														1			
1.Ved	ic Mathem	atics, Swa	ami B	harati Krish	na T	rithaji,	Moti	lal B	anars	sidas	, Ne	w De	lhi,	1990.	,			
Reference	es																	
1. Ele	ments of V	edic Matl	hema	tics, Udayan	S.]	Patankar r Thaku	:, Su r Ri	nil M 102 P	l. Pata	anka	r, T	ΓU Pi Ιew Γ	ress Jelh	,2018	8. 9			
E-Refere	ences		/111at1V	5, Rajesti K	41110		1, 11	*pu 1		unor	13, 1	UVV L		<u>,201</u>				
1 http																		
I . IIID	://www.funw	ithfigures.c	:om/															

COs VS POs													
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO	PSO1	PSO2		
CO 1	3	3	2	0	1	3	3	3	3	3	0		
CO 2	3	2	1	0	0	2	2	2	3	2	0		
CO 3	3	2	1	0	0	2	2	2	3	2	0		
CO 4	3	3	2	0	1	3	3	3	3	3	0		
CO 5	3	3	2	0	1	3	3	3	3	3	0		
TOTAL	15	13	8	0	3	13	13	13	15	13	0		
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0		
0 - No Relation, 1 -	0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
1-5→1, 6-10→2, 11-	1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3												

CO	URSE NA	ME	Python Programming	L	Т	Р	С						
CO	URSE CC	DDE	XMT506A	2	1	0	3						
С	Р	Α		L	Т	Р	Н						
3	0	0		2	1	0	3						
PRERE	QUISITE	I	Basic programme language				<u> </u>						
On succe	ssful com	pletion of	this course, the students will be able to:										
		CO	URSE OUTCOMES	DOMAI	N	LEVI	EL						
CO 1	Demonst program	trate the 1 ming.	basics of object-oriented concepts and python	Cognitiv	e 1	Understa	nding						
CO 2	CO 2Utilize the array, develop the programs using selection and jump statements.CognitiveApplyingCO 3Illustrate the significance of function, strings and modules; and CognitiveCognitiveUnderstanding												
CO 3Illustrate the significance of function, strings and modules; and Implement in various applications.CognitiveUnderstandingCo 4Demonstrate the List Tuples and Dictionary: and write programCognitiveApplying													
Implement in various applications. Cognitive CO4 Demonstrate the List, Tuples and Dictionary; and write program using the list, tuples and dictionary. Cognitive Applying													
CO 5	Analyze	the given	data by handling the files in Python.	Cognitiv	e	Analyz	ing						
UNIT 1	Basics of	f Object (Driented and Python Programming		•	6+	3						
Objects – Basics of Identifier Indentatio	- Encapsul f Python P rs – Keyv on – Opera	ation – Po rogrammin vords – 1 ators – Exp	lymorphism – Inheritance – Abstraction. ng: History of Python – Features of Python – Li Built-in Data Types – Output Statements – pressions – Type conversions.	teral – Con InputStater	istants ments	– Varia – Comm	bles – ients –						
UNIT 2	Python A	Arrays an	d Control Statements			6+	3						
Python A Control statemen break, co UNIT 3	Arrays: Des Statements ts. Iterative ntinue and Function	fining and s: Selectio e Statemen l pass state ns, Strings	Processing Arrays – Array methods. on / Conditional Branching statements – if, if nts: While loop, for loop, else suite in loop and ements. s and Modules	else, neste nested loop	ed if a os. Jun	and if-el np Staten	if-else nents : 3						
Function Recursion String C Namespa	s: Functio n. Python omparison ce – Defir	n Definiti Strings: St . Modules	on – Function Call – Variable Scope and its tring operations – Immutable Strings – Built-in s : Import statement – The Python module – vn modules.	Lifetime – StringMeth dir() func	Returned Ret	rn Stater nd Funct - Module	nent – ions – es and						
UNIT 4	UNIT 4Lists, Tuples and Dictionaries6+3												
Lists: Cro List Met Difference Dictionar	eating a lis hods. Tup ce betweer <u>cy – Dictio</u>	st – Access les: Creat lists and nary Funct	s values in List – Updating values in Lists – Nessing, Accessing, Updating and Deleting Elementuples. Dictionaries : Creating, Accessing, Updations and Methods – Difference between Lists and States and Methods – Difference between Lists and States and Methods – Difference between Lists – Nessing and Methods – Difference between Lists and Methods – Difference between	ted lists – E its in a tup ating and D d Dictionar	Basic I le – N eleting ries.	ist operat Nested tu g Elemer	ions – ples – its in a						
UNIT 5	File Han	dling and	Data Analysis			6 +	3						
File Hand words –	lling: Type File meth	es of files i ods – File	in Python – Opening and Closing files – Reading e Positions – Renaming and deleting files. D	g and Writin ata Analysi	ng file s using	s – Splitt g Python	ing :						

Load data into a Dat	ta Frame – Fu	ndamentals of I	Data Man	ipulation with Pyth	on.		
LECTURE	30	TUTORIAL	15	PRACTICAL	0	TOTAL	45
Text Book	I		I				
1. Reema Thareja, University Press.	"Python Pro	gramming usin	g proble	m solving approac	h", 2 nd I	Edition, 2023	,Oxford
2. Dr. R. Nageswar	a Rao, "Core	Python Program	nming", 3	rd Edition, 2021, D	ream tecl	h Publishers.	
References							
1. Vamsi Kurama, '	"Python Prog	amming: A Mo	dern App	oroach", Pearson Ec	lucation.		
2. Mark Lutz, "Lea	rning Python'	', Orielly.					
3. Adam Stewarts,	"Python Prog	ramming", Onli	ne.				
4. Fabio Nelli, "Pyt	hon Data Ana	lytics: With Par	ndas, Nui	nPy, and Matplotli	b", APre	ss.	
5. Kenneth A. Lam	nbert, "Fundar	mentals of Pyth	on – Firs	st Programs", 2 nd E	Edition, C	CengagePubli	cation.
E-References							
1. NPTEL Cours	e in Python fo	or Data Science	by Prof.	Ragunathan Renga	samy, II7	Madras,	
https://onlinec	ourses.nptel.a	c.in/noc22_cs32	2/preview	7			
2. Python for Be	ginners, https:	//alison.com/co	urse/pyth	on-for-beginners			
3. Python for Fu	ndamentals fo	r Beginners, htt	ps://www	.mygreatlearning.c	om/acad	emy/learn-fo	r-
free/courses/p	ython-fundam	entals-for-begin	nners				
4. Python Certifi	cate Course, ł	nttps://data-flair	.training/	courses/python-cou	irse/		

5. Crash Course on Python, https://www.coursera.org/learn/python-crash-course

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	3	2	0	1	3	3	3	3	3	0
CO 3	3	2	1	0	0	2	2	2	3	2	0
CO 4	3	3	2	0	1	3	3	3	3	3	0
CO 5	3	3	3	1	2	3	3	3	3	3	1
TOTAL	15	13	9	1	4	13	13	13	15	13	1
SCALED VALUE	3	3	2	1	1	3	3	3	3	3	1
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
1-5→1, 6-10→2, 11-	15→3										

CO	URSE NA	ME		Mathem	atics for	Finance	L	Т	P	С				
CO	URSE CC	DDE		y	KMT506I	3	2	1	0	3				
С	Р	Α					L	Т	Р	Н				
3	0	0					2	1	0	3				
PRERE	QUISITE		Basi	c Economics			1	1	1					
On succ	essful com	pletion of	f this o	course, the stu	dents wi	l be able to:								
		CO	URSE	E OUTCOME	S		DOMAI	N	LEVI	EL				
CO 1	Estimate	e Time val	lue of	money and cor	npound ir	nterest functions.	Cognitiv	'e	Evalua	ting				
CO 2	CO 2Measure breakeven point and make use of breakeven point in managerial decision makingCognitiveEvaluatingCO 3Estimate Appuities and Equation of Value DiscountingCognitiveEvaluating													
CO 3	Estimate	e Annuitie	ounting	Cognitiv	'e	Evalua	ting							
CO 4	CO4Estimate internal rate of return with reference to IRR method and valuing a loan with allowance for capital gains.Cognitive													
CO 5	Estimate	e stock and		Cognitiv	ve	Evalua	ting							
UNIT 1	Introduct	tion							6 +	3				
Simple a	nd compou	and interes	st. Kin	ds of interest r	ates: Effe	ctive rate, nomina	l rate and f	orce of	interest	rates -				
Calculati	on of accu	imulated v	value i	using different	kinds of	interest rates - the	time value	e of mo	oney - I	resent				
value cal	culation ar	id discoun	$\frac{1}{1}$ t rate -	Nominal rate	of discour	nt and its relationsh	np with eff	ective r	ate of di	scount				
UNIT 2	Break ev	$\frac{\text{en Analys}}{1}$	sis and	leverage			1 1.	11	6 +	3				
Break-ev	en point –	Chart - D	vecisio	n making – lev	$\frac{1}{2}$ erage – c	perating – financia	al - combin	ied leve	erage.	2				
Digarata	Annulle	s and Equa	flow	of value Disco	unung an	d Accumulation	laaraasina	onnuiti		$\frac{\mathbf{J}}{\mathbf{tion of}}$				
Discrete	and contin	uous cash	n nroh	s; level annulue	flows hi	ther discount loar	schedules		es, equa	lion of lit: flat				
rate and	ΔPR_{s}	lansaction	i, proc	autity of cash	110ws, 111	gner discount, ioan	schedules	, consu		III. IIai				
UNIT 4	Capital F	Budgeting	Techn	iques					6+	3				
Introduct	ion to fina	ncial state	ement.	assessing final	ncial perf	ormance, net prese	nt value, ir	iternal	rate of r	eturn.				
payback	period; pro	ojects with	n diffe	rent live.	1	, I	,			,				
UNIT 5	Risk and	insurance	;						6+	3				
Long-terr	n and shor	t-term ins	urance	e, Life Insuranc	e, Endow	ment, and annuition	es, Insurano	ce polic	ies,					
automob	ile insuran	ce, proper	rty ins	urance, indemr	nity princi	ple, coinsurance p	rinciple, va	luation	of stoc	s and				
bonds.	bonds.													
LEC	LECTURE30TUTORIAL15PRACTICAL0TOTAL45													
Text Boo	oks		4											
1. Arlie Unde Tech	O Petters rstanding	s, Xiaoyir and Buil	ng Do ding 1	ng (2016) An Financial Intu	Introduc ition (Sp	ction to Mathema ringer Undergradu	tical finan 1ate texts	ce with in Ma	n applic thematio	ations: s and				
2. Ross	S.M., (1)	999): An	Intro	duction to Ma	thematica	l Finance, Cambr	ridge Univ	ersity	Press, N	lorton,				

3. Martin, P.G. and Michael B., (1991): Applied Financial Mathematics, Prentice Hall.

References

1. Baxter, M. and A. L. Rennie, (1996): Financial Calculus, Cambridge University Press.

2. Karatzas, L. and Shreve S.E., (1998): Methods of Mathematical Finance, Springer.

3. Watsham, T.J .and Perramore. K., (1997): Quantitative Methods in Finance, International Thomson Business Press.

E-References

https://nptel.ac.in

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	3	3	2	3	3	3	3	3	3	2	
CO 2	3	3	3	2	3	3	3	3	3	3	2	
CO 3	3	3	3	2	3	3	3	3	3	3	2	
CO 4	3	3	3	2	3	3	3	3	3	3	2	
CO 5	3	3	3	2	3	3	3	3	3	3	2	
TOTAL	15	15	15	10	15	15	15	15	15	15	10	
SCALED VALUE	3	3	3	2	3	3	3	3	3	3	2	
0 - No Relation, 1 –	Low Re	lation, 2	2- Med	ium Re	lation,	3- High	Relatio	on				
1-5→1, 6-10→2, 11-	-15→3											

SEMESTER VI

CO	URSE NA	ME		Com	plex Ana	lysis	L	T	F	•	С		
CO	URSE CC	DDE			XMT601		3	1	0)	4		
С	Р	Α					L	T	F	•	Н		
4	0	0					3	1	0)	4		
PRERE	QUISITE		Real	Analysis									
On succ	essful com	pletion of	f this c	course, the stu	idents wi	ll be able to:							
		CO	URSE	COUTCOME	S		DOMAIN LEVEI						
CO 1	Determi different	ne whetl iable / ana	her tl ılytic.	ne given fu	nction is	s Continuous /	Cognitiv	/e	Eva	luati	ing		
CO 2	Determi transform	ne the im nation	he given bilinear	Cognitiv	/e	Evaluating							
CO 3	Explain	Cauchy's	formula	Cognitiv	/e	Under	rstar	ding					
CO 4	Determi the conce	ne the ann epts of ser	nulus o ies exp	of convergence pansion	e of a give	en function using	Cognitiv	/e	Eva	luat	ing		
CO 5	Evaluate theorem	e complex	conto	our integrals u	ising the	Cauchy Residue	Cognitiv	/e	Evaluating		ing		
UNIT 1	Compley	x number	'S							9+3	3		
Complex	numbers	- Function	ns of a	complex varia	able – Lir	nits – Theorems or	n limit – C	ontin	uous fi	incti	ions –		
Different	tiability - T	The Cauch	y Rier	nann equations	s – Analy	tic functions – Har	monic func	ctions					
UNIT 2	Bilinear	Transfor	matio	n						9+3	3		
Introduct transforn	tion – Eler nation – so	nentary tr me specia	ansfor al bilin	mations – Bili ear transforma	inear tran tions.	sformation – cross	s ratio – fiz	xed p	oints o	of bi	linear		
UNIT 3	Complex	x Integrat	tion							9+3	3		
Introduct	tion – defin	ite integra	al – Ca	uchy's Theore	m – Cauc	hy's integral formu	la–Maxin	num n	nodulu	s the	eorem		
– Higher	derivative	s – Cauch	y's ine	quality – Liouv	ville's the	orem – Fundament	al theorem	ofalg	gebra –	Mo	rera's		
theorem.	1												
UNIT 4	Series E	xpansions	S							9+3	3		
Introduct Riemann	ion – Tay 's theorem	lor's serie 1 - meromo	es – La orphic	urent's series function.	– Zeros	of an analytic fund	ction – sing	gulari	ties an	id po	oles –		
UNIT 5	Calculus	of Resid	ues							9+3	3		
Residues	– Cauchy	y's Residu	ue the	orem – Argun	nent theor	rem – Rouche's th	neorem - E	Evalua	ation c	of de	efinite		
integral -	integral –Contour integration types.												
LEC	TURE	45		TUTORIAL	15	PRACTICAL	0	тот	TAL	(60		
Text Boo	ok		I						I				
1. "Con 2014	nplex Anal	ysis" by S	S.Arun	nugam, A. Tha	ngapandi	Isaac, A. Somasur	ndaram, Sc	itech	Public	atio	18,		
U	nit I	:	Chap	ter 1 (Sec: 1.1)	, Pages: 1	1 - 2							
			Chap	ter 2 (Sec: 2.1	– 2.8), Pa	ages: 24 – 52							
U	Unit II : Chapter 3 (Sec: $3.1 - 3.5$), Pages: $74 - 100$												

Unit III	:	Chapter 6(Sec: 6.1 – 6.4), Pages: 132 – 170
Unit IV	:	Chapter 7(Sec: 7.1 – 7.4), Pages: 173 – 207
Unit V	:	Chapter 8(Sec: 8.1 – 8.3), Pages: 209 – 254

- 1. "Foundations of complex Analysis" by S.Ponnusamy- Narosa Publishing House- New Delhi Chennai.
- 2. "Functions of a complex variables with applications" by E.G. Phillis (1968)- Oliver & Boy D, Edinburg
- 3. Churchill.R.V.and J.W. Brown "Complex variables and Applications" Fourth Edition McGraw Hill International Editions.
- 4. Duraipandian. P. and Lakshmi Duraipandian "Complex Analysis" Emerald Publications, Chennai (2001).
- 5. Roopkumar R. Complex Analysis, Pearson Education India, 2014.

- 1. https://courses.maths.ox.ac.uk/node/9[Oxford]
- 2. https://services.math.duke.edu/~ng/math633s14/syllabus.pdf [Duke]
- 3. https://nptel.ac.in

COs VS Pos												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2	
CO 1	3	3	3	2	3	3	3	3	3	3	2	
CO 2	3	3	3	2	3	3	3	3	3	3	2	
CO 3	3	2	1	0	0	2	2	2	3	2	0	
CO 4	3	3	3	2	3	3	3	3	3	3	2	
CO 5	3	3	3	2	3	3	3	3	3	3	2	
TOTAL	15	14	13	8	12	14	14	14	15	14	8	
SCALED VALUE	3	3	3	2	3	3	3	3	3	3	2	
0 - No Relation, 1 –	Low Re	lation, 2	2- Medi	ium Re	lation,	3- High	Relatio)n			1	
1-5→1, 6-10→2, 11-	-15→3											

CO	URSE NA	ME	I	8	L	Т	P	C					
CO	URSE CO	DE			3	1	0	4					
С	Р	Α				L	Т	Р	Н				
4	0	0				3	1	0	4				
PREREC	QUISITE		Algebra & Trigono	ometry				1					
On succe	essful com	pletion of	this course, the stu	idents wil	l be able to:								
		CO	URSE OUTCOME	S		DOMA	IN	LEV	EL				
CO 1	Demonst acted upo	t rate nece on by vario	ssary conditions for ous forces	the equilib	prium of particles	Cognitiv	ve l	Understa	anding				
CO 2	Analyze	various sy	stems of forces			Cognitiv	ve	Analyzin					
CO 3	Explain	the relatio	n between work and	power		Cognitiv	ve l	Jndersta	anding				
CO 4	Illustrate the effects of a projectile acted upon various forces Cognitive Understanding Apply the theory of central orbit to study planetary motions. Cognitive Applying												
CO 5	Apply the theory of central orbit to study planetary motions.Cognitive												
UNIT 1	Force:							9 + 3					
Newton's	s laws of 1	notion – l	Resultant of two for	ces on a p	particle - Equilibri	um of a Pa	article:	Equilib	rium of				
a particle	<u> </u>	ig equilibr	rium of a particle on	an incline	d plane.								
UNIT 2	Forces o	n a Rigid	Body:	D · 1		D 11 1	-		9+3				
Moment	of a Force	– General	motion of a body $-$	Equivalen	t systems of forces	- Parallel	Forces -	- Forces	sacting				
along a 1	Work Fr	A specific	Power:	Reduction	i of coplanar force	is into a to	rce and	couple	0 + 3				
Work -	Conservat	ive field ($\frac{10}{10}$ force – Power -R	Pectilinear	Motion under Va	arving For	ce. Sim	nle Ha	rmonic				
Motion –	along a h	orizontal l	ine – along a vertica	1 line		irying 101	cc. Sill						
UNIT 4	Projectil	es:	ine utong u vertieu						9+3				
Forces o	n a projec	ctile – Pro	piectile projected or	n an incli	ned plane								
UNIT 5	Central C	Orbits:	5 1 5		1				9+3				
General o	rbits – Cer	ntral orbit	– Conic as a centere	d orbit									
LEC	ГURE	45	TUTORIAL	15	PRACTICAL	0	TOTA	1L	60				
Text Boo	ok												
1. M L	Mechanics, P. Duraipandian, Laxmi Duraipandian, Muthamizh Jayapragasam, S.Chand & Company Ltd., Fourth Edition, Sixth Revised Edition 2005.												
		~ .						• • • •					
1.Intr2.The3.Engltd	Introduction to Statics and Dynamics, A. Ruina and R, Pratap,Oxford UniversityPress, 2014. The Elements of Statics and Dynamics,S.L. Loney, Cambridge University Press,1904. Engineering Mechanics: Statics, J.L.Meriam and L.G.Kraige, Seventh Edition,Wiley and Sons Pvt												

- 4. Engineering Mechanics: Dynamics, J.L. Meriam, L. G. Kraige, and J.N. Bolton, 8thedn, Wiley and sons Pvt ltd., New York, 2015.
- 5. Engineering Mechanics (Statics andDynamics), K. Dhiman, P.Dhinam and D. Kulshreshtha, Mc Graw Hill Education(India) Private Limited, New Delhi, 2015.

- 1. https://nptel.ac.in
- 2. https://archive.nptel.ac.in/courses/115/104/115104094/
- 3. <u>https://www.youtube.com/watch?v=FD4BQjMuhYY</u>
- 4. <u>https://www.youtube.com/watch?v=olTD-mpsU4E</u>
- 5. https://www.digimat.in/nptel/courses/video/122104015/L27.html

COs VS Pos											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	3	3	1	2	3	3	3	3	3	1
CO 3	3	2	1	0	0	2	2	2	3	2	0
CO 4	3	2	1	0	0	2	2	2	3	2	0
CO 5	3	3	2	0	1	3	3	3	3	3	0
TOTAL	15	12	7	1	3	12	12	12	15	12	1
SCALED VALUE	3	3	2	1	1	3	3	3	3	3	1
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
$1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$											

COURSE NAME				Optimiz	zation Tec	L	Т	Р	C			
CO	COURSE CODE				XMT603	3	1	0	4			
С	Р	Α					L	Т	Р	Н		
4	0	0					3	1	0	4		
PRERE	QUISITE		1	1								
On successful completion of this course, the students will be able to:												
COURSE OUTCOMES DOMAIN										EL		
CO 1	Solve lin	ear progra	ammin	ıg problem usi	ng Simple:	x Method	Cognitiv	ve 🛛	Applying			
CO 2	Utilize Transpor	MODI tation pro	metho blem	od to obtain	n optimu	m solution of	Cognitiv	ve	Apply	ving		
CO 3	Apply do two-perso	ominance on zero su	prope im gar	erty to obtain s nes	saddle poir	nts for the given	Cognitiv	ve 🛛	Apply	ving		
CO 4	Determin & CPM	ne the min	nimun	n time to com	plete a pro	ject using PERT	Cognitiv	ve 🛛	Evalua	iting		
CO 5Classify the dynamics of inventory management's principles, concepts, and techniques as they relate to the entire supply chain (customer demand, distribution, and product transformationCognitiveAnalyz									zing			
UNIT 1 9+3												
Linear Programming Problem: Mathematical formulation of LPP - Simplex Method - Artificial variable												
technique - Concept of Duality - Primal and Dual Problems - Duality - Dual Simplex Method.												
UNIT 2					1 1 1 1 1		T T 11 4		9+	- 3		
Transportation Problem : North-West Corner Rule - Matrix Minima method - Vogel's Approximation Method - MODI Method - Degeneracy and Unbalanced Transportation Problem.												
Assignment Problem: Hungarian Method - Unbalance Assignment Problem - Travelling Salesman Problem.												
UNIT 3 9+3										- 3		
Games and Strategies: Two Person Zero sum Games - The Maximin - Minimax Principle - Games without Saddle Points - Mixed Strategies - Graphical Solution of 2 x n and m x 2 games - Dominance Property												
UNIT 4 9+3									- 3			
Network scheduling by PERT / CPM: Network and basic components - Rules of Network Construction - Time Calculation in network - Critical Path Method - PERT Calculation												
UNIT 5 9+3								- 3				
Inventory Control: Introductions - Types of Inventories - Inventory decisions - Deterministic inventory												
Problems - EOQ Problems with no shortages - Production Problems with no shortages - EOQ problems with shortages - Production Problems with shortages. EOQ Problems with One and More Price breaks												
LEC	ΓURE	45		TUTORIAL	15	PRACTICAL	0	TOTA	AL	60		
Text Book												
1. Kanti editic	Swarup, on.	P.K. Gupt	ta and	Manmohan - (Operations	Research - Sultan	Chand &	Sons –	2006, 1	2th		

- 1. Gupta.P.K.and D.S. Hira Operations Research S.Chand and Company.
- 2. Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, Linear Programming and Network Flows, 2nd Ed., John Wiley and Sons, India, 2004.
- 3. Hillier, F.S. and G.J. Lieberman, Introduction to Operations Research, 9th Ed., Tata McGraw Hill, Singapore, 2009.
- 4. Hamdy A. Taha, Operations Research, An Introduction, 8th Ed., Prentice Hall India, 2006.
- 5. Hadley, G. Linear Programming, Narosa Publishing House, New Delhi, 2002.

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https://web.stanford.edu/group/sis1/k12/optimization/#!index.md[StandardUniversity]

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO	PSO1	PSO2
CO 1	3	3	2	0	1	3	3	3	3	3	0
CO 2	3	3	2	0	1	3	3	3	3	3	0
CO 3	3	3	2	0	1	3	3	3	3	3	0
CO 4	3	3	3	2	3	3	3	3	3	3	2
CO 5	3	3	3	1	2	3	3	3	3	3	1
TOTAL	15	15	12	3	8	15	15	15	15	15	3
SCALED VALUE	3	3	3	1	2	3	3	3	3	3	1
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
$1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$											

COURSE NAME			Industrial Mathematics 4.0	L	Т	Р	С				
CO	URSE CO	DDE	XMT604A	3	1	0	4				
C	Р	Α		L	T	P	Н				
1	0	0		2	1	0	1				
	U	U		5	I	U	-				
PREREQUISITE Statistics											
On successful completion of this course, the students will be able to:											
		DOMAI	N	LEV	EL						
CO 1	Infer th Intelligen	ne reason	for adopting Industry 4.0 and Artificial	Cognitiv	/e	Understa	nding				
CO 2	Demons	trate the r	need for digital transformation.	Cognitiv	ve 🛛	Understanding					
CO 3	Apply th	e industry	4.0 tools.	Cognitiv	ve 🛛	Applying					
CO 4	Analyze	the applic	ations of Big Data.	Cognitiv	ve	Analyzing					
CO 5	Examine the applications and security of IoT Applications Cognitive Ana										
UNIT 1 Industry 4.0 9+3											
Need – R 4.0 – Bi Augment UNIT 2 Artificial	Need – Reason for Adopting Industry 4.0 - Definition – Goals and Design Principles - Technologies of Industry 4.0 – Big Data – Artificial Intelligence (AI) – Industrial Internet of Things - Cyber Security – Cloud – Augmented Reality. UNIT 2 Artificial Intelligence 9+3 Artificial Intelligence: Artificial Intelligence (AI) – What & Why? - History of AI - Foundations of AI - The AI										
-environ	nent - Soc	ietal Influ	ences of AI - Application Domains and Tools -	Associated	Tech	nologies	of AI -				
UNIT 3	Big Data	And IoT				9+	3				
Big Data Industry Processin Science - Data in S Internet of Applicati	: Evolutio 4.0 - Big I ng Framew Big Data ocial Caus of Things	on - Data E Data Meri yorks - Big in IoT - E ses - Big D (IoT) : Int lications of	Evolution - Data : Terminologies - Big Data Defin ts and Advantages - Big Data Components : Big g Data Applications - Big Data Tools - Big Data I Big Data in Machine Learning - Big Data in Data ata for Industry - Big Data Roles and Skills -Big I roduction to IoT - Architecture of IoT - Techno of IoT - Security in IoT	nitions - Es Data Char Domain Sta abases - Bi Data Roles logies for	ssentia racteri ack : H g Dat - Lear IoT -	al of Big I stics - Bi Big Data i a Use cas rning Plat Developi	Data in g Data n Data ses Big forms; ng IoT				
UNIT 4 Applications And Tools Of Industry 4.0 9+3											
Applicati Transpor Tools fo Robotics	ions of Io' tation and r Artificia	Γ – Manu Logistics I Intellige	facturing – Healthcare – Education – Aerospac – Impact of Industry 4.0 on Society: Impact on ence, Big Data and Data Analytics, Virtual Re	ce and Det Business, cality, Aug	fense Gove mente	– Agricu rnment, I ed Reality	lture – People. y, IoT,				
Industry 4	Industry 4.0 – Education 4.0 – Curriculum 4.0 – Faculty 4.0 – Skills required for Future - Tools for Education										
- Artificial Intelligence Jobs in 2030 - Jobs 2030 - Framework for aligning Education with Industry 4.0.											
LECTURE	45	TUTORIAL	15	PRACTICAL	0	TOTAL	60				
---	---------------	------------------	------------	--------------------	---------	-------	----	--	--	--	--
Text Book											
1. Higher Education for Industry 4.0 and Transformation to Education 5.0(2020)- P.Kaliraj& T. Devi											
Reference											
1. Advances in	Mathematics	for Industry 4.0	1st Editio	on, Kindle Edition	, 2020.						
E-References	E-References										
1. htttps://doi.or	g/10.1016/j.m	atpr.2020.06.331									
2. https://nptel.ac.in											

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	РО	PSO1	PSO2	
CO 1	3	2	1	0	0	2	2	2	3	2	0	
CO 2	3	2	1	0	0	2	2	2	3	2	0	
CO 3	3	3	2	0	1	3	3	3	3	3	0	
CO 4	3	3	3	1	2	3	3	3	3	3	1	
CO 5	3	3	3	1	2	3	3	3	3	3	1	
TOTAL	15	13	10	2	5	10	13	13	15	13	2	
SCALED VALUE	3	3	2	1	1	2	3	3	3	3	1	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3												

CO	URSE NA	ME		Introduction	to Machi	ne Learning	L	T		Р	С
CO	URSE CC	DDE		2	XMT604B	5	3	1		0	4
С	Р	Α					L	T		Р	Η
4	0	0					3	1		0	4
PRERE	QUISITE		Alg	gebra, Trigonon	netry, Prob	ability and Statist	ics	<u> </u>			
On succe	essful com	pletion of	f this	course, the stu	idents wil	l be able to:					
		CO	URS	E OUTCOME	S		DOMAI	N]	LEVI	EL
CO 1	Demons Learning	trate the , and Pred	bas lictiv	ics of Artific e Models.	ial Intelli	gence, Machine	Cognitiv	<i>r</i> e	Une	lersta	nding
CO 2	Interpre used in n	t the signi	ificar arnin	nce of Probabili g algorithms.	stic and St	cochastic Models	Cognitiv	⁷ e	Une	lersta	nding
CO 3	Apply the simple data	ne basic su atasets.	ıperv	vised learning a	lgorithms	and Classify the	Cognitiv	'e	P	Apply	ng
CO 4	Analyze the use o	the simila f unsuperv	arities vised	s and Grouping learning algorit	the undef thms.	ined data sets by	Cognitiv	⁷ e	A	nalyz	ing
CO 5	CO 5 Evaluate the learning models by using basic performance Cognitive Evaluating Evaluating										ing
UNIT 1	Basics C	oncepts o	f Ma	chine Learnin	g					9+	3
Introduct	ion–Artifi	cialIntellig	gence	e–Differencebet	weenAIan	dMachineLearnin	g–Predictio	on ar	nd C	lassifi	cation
A simple predicting machine – Training a simple classifier –Types of machine learning – Applications of											
Machine	Learning -	 Perspect 	ives	and issues in ma	achine lear	rning.					
UNIT 2	Probabi	listic and	Stoc	hastic Models						9+	3
Introduct	ion – Bay	esian Lea	rning	g – Bayes theor	em, Conce	ept learning, Maxi	mum likel	ihood	d, Ba	yes o	ptimal
classifier	, Gibbs alg	gorithm, N	Jaive	Bayes classifie	er, Expecta	tion maximization	n and Gaus	sian	Mixt	ure M	lodels,
Hidden N	/larkov mc	odels.									
UNIT 3	Supervis	sed Learn	ing							9+	3
Introduct Vector M multi-lay	ion–Regre Iachine, L er network	ession, Lin ogistic reg ts and bac	near gress k pro	regression, Cla ion, Random F pagation.	assificatior orest. Arti	a: Decision trees, ficial Neural Netv	k-Nearest work: Intro	: Nei oduct	ighbo ion,	ors, S Percej	upport ptions,
UNIT 4	Unsuper	vised Le	arnii	ıg						9+	3
Introduct	ion-Super	vised vs	Unsu	pervised Clust	er Analys	is, K means clus	stering, Hi	erarc	hica	clus	tering.
Dimensio	on reduction	on: Princip	al Co	omponent Analy	ysis, Linea	r Discriminant Ar	alysis.				-
UNIT 5	Modellir	ng and Ev	alua	tion						9+	3
Introduct	ion – Buil	ding the n	node	l, training a mo	del, Evalu	ating a model, Im	proving a	mode	el. P	erforn	nance
Metrics -	- Accuracy	<u>y, Precisi</u> o	<u>n, R</u> e	ecall, Sensitivity	<u>y, Specifi</u> c	ity, AUC, RoC, B	ias Varianc	e dec	comp	<u>ositi</u> c	m.
	TURE	45		TUTORIAL	15	PRACTICAL	0	TO	ΓAL		60
Text Boo	oks										
1. Su Pea	bramanian arson Educ	Chandran cation, Ind	nouli ia.	, Saikat Dutt, A	mit Kuma	r Das, "Machine I	Learning", 2	2 nd Eo	ditio	n, 201	8,
2. Etł	2. Ethem Alpaydin, "Introduction to Machine Learning", 4 th Edition, 2020, MIT Press.										

3. Tariq Rashid, "Make Your Own Neural Network",2016, Create Space Independent Publishing Platform

References

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- 2. T.Hastie, R. Tibshirani and J.Friedman, "Elements of Statistical Learning", Springer.
- 3. Charu C.Aggarwal, "DATA CLUSTERING Algorithms and Applications", 2014, CRC Press.
- 4. C.Bishop, "Pattern Recognition and Machine Learning", Springer.

5. Sebastian Raschka and Vahid Mirjalili, "PythonMachineLearning", 3rdedition, 2019, Packet Publishing. **E-References**

- 1. NPTEL Course in *Introduction to Machine Learning* by Dr. Balaraman Ravindran, IIT Madras, <u>https://nptel.ac.in/courses/106106139</u>
- 2. NPTELCourse in *Introduction to Machine Learning (Tamil)*by Prof.Arun Rajkumar, IITMadras,<u>https://nptel.ac.in/courses/106106236</u>
- 3. *Machine Learning for Absolute Beginners*, <u>https://alison.com/topic/learn/132506/introduction-to-ai-and-ml-learning-outcomes</u>
- 4. Supervised Machine Learning :Regression and Classification, https://www.coursera.org/learn/machine-learning
- 5. Unsupervised Learning, Recommenders ,Reinforcement Learning, https://www.coursera.org/learn/unsupervised-learning-recommenders-reinforcement-learning

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	2	1	0	0	2	2	2	3	2	0
CO 3	3	3	2	0	1	3	3	3	3	3	0
CO 4	3	3	3	1	2	3	3	3	3	3	1
CO 5	3	3	3	2	3	3	3	3	3	3	2
TOTAL	15	13	10	3	6	13	13	13	15	13	3
SCALED VALUE	3	3	2	1	2	3	3	3	3	3	1
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
$1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$											

CO	URSE NA	ME	A	stronon	ıy	L	Т	P	C			
CO	URSE CO	DE	2	KMT604	С	3	1	0	4			
С	Р	Α				L	Т	Р	Н			
4	0	0				3	1	0	4			
PREREC	QUISITE		Algebra and Trigor	nometry				1				
On succe	essful com	pletion of	this course, the stu	dents wi	ll be able to:							
		CO	URSE OUTCOME	S		DOMA	IN	LEVI	EL			
CO 1	Apply the sphere ar	e concept d diurnal	of spherical trigonomotion.	ometry to	explain celestial	Cognitiv	ve	Apply	ing			
CO 2	Explain	the effects	of various types of	parallax.		Cognitiv	ve L	Jndersta	nding			
CO 3	Apply K the radius	epler's lav s and perio	v of harmonies to m od of orbits of planet	ake calcı s.	lations regarding	Cognitiv	CognitiveOndeCognitiveUndeCognitiveUnde					
CO 4	Explain	the format	tion of moon and its	surface f	eatures.	Cognitiv	ve L	Jndersta	nding			
CO 5	Explain	a brief his	tory of Astronomy.			Cognitiv	ve L	Jndersta	nding			
UNIT 1	UNIT 1 9+3											
Spherical	Trigonon	netry - Spł	nerical Triangle - The	e fundam	ental formulae of S	pherical T	rigonor	netry, th	e sine,			
cosine, four parts and Napier formulae (without proof).												
The Cele	stial Spher	re: Celesti	al coordinators - Di	urnal mo	tion - Rising and se	etting of a	star - S	Sidereal	time -			
Circumpo	olar star - I	Morning a	nd Evening stars - T	wilight -	Earth - Length of th	ne day.						
UNIT 2								9 +	3			
Refractio	n - Tange	nt Formul	a – Cassini's formu	la - Effec	cts of Refraction - 0	Geocentrie	: Paralla	ax - Eff	ects of			
Geocentr	ic Parallax	- Helioce	entric Parallax - Effect	ets of He	iocentric Parallax -	Aberratic	n - Its E	Effects.				
UNIT 3								9 +	3			
Kepler's	Laws - Ve	rification	of Kepler's Laws - T	rue anom	aly, Mean Anomaly	y - Eccent	ric Ano	maly, R	elation			
between	them - Tin	ne - Equat	ion of Time - Seasor	is - Conv	ersion of Time.							
UNIT 4								9 +	3			
Moon - S	idereal Mo	onth, Luna	tion and Relation be	tween the	em - Phases of the N	loon - Lui	ıar Libr	ation - S	lurface			
of the Mo	on - Meto	nic Cycle	- Tides - Eclipses - S	Shadow C	one - Minimum and	d Maximu	m numb	per of Ec	lipses.			
UNIT 5				~				9+	3			
Planetary	Phenomer	na - Bode	s law - Elongation -	Sidereal	Period, Synodic p	eriod and	the rela	ation be	ween			
them - I	hase - St	ationary	Points - Solar Syste	em - Ste	llar Universe - A	brief hist	ory of	Astrono	omy -			
Astronor	nical Instr	uments.	TUTODIAI	15		0	тоти	T	(0)			
		45	TUTORIAL	15	PRACTICAL	U	IUIA		00			
Text Boo)K											
1. Kuma (2005	aravelu. Sa 5).	and Sushee	ela Kumaravelu – As	stronomy	for degree classes,	Rainbow	printers	, Nagaro	oil			
Reference	es											
1. A Te:	1. A Text-Book of Astronomy, By: Ramachandran, G. V, Tiruchirappalli Rukmani Ramachandran 1970.											

 George.O.Abell - Exploration of the Universe Holt, Rinehart & Winston of Canada Ltd; 2nd Revised edition (1 June 1969).

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1. http://bulletin.columbia.edu/columbia-college/departments-

instruction/astronomy/#coursestext [Columbia University]

2. <u>Https://Www.Physics.Utoronto.Ca/~Jharlow/Teaching/Astron03/Fullnotes/</u>

[University Of Toronto]

COs VS POs												
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	
CO 1	3	3	2	0	1	3	3	3	3	3	0	
CO 2	3	2	1	0	0	2	2	2	3	2	0	
CO 3	3	3	2	0	1	3	3	3	3	3	0	
CO 4	3	2	1	0	0	2	2	2	3	2	0	
CO 5	3	2	1	0	0	2	2	2	3	2	0	
TOTAL	15	12	7	0	2	12	12	12	15	12	0	
SCALED VALUE	3	3	2	0	1	3	3	3	3	3	0	
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation												
$1-5 \rightarrow 1, \ 6-10 \rightarrow 2, \ 11-15 \rightarrow 3$												

CO	URSE NA	ME	Stoch	astic Pro	cesses	L	Т	Р	С			
CO	URSE CO	DE	2	XMT604E		3	1	0	4			
С	Р	A				L	Т	Р	Н			
4	0	0				3	1	0	4			
PRERE	QUISITE		Probability and Sta	atistics		1		1	_1			
On succe	essful com	pletion of	this course, the stu	idents wil	l be able to:							
		CO	URSE OUTCOME	S		DOMA	IN	LEV	EL			
CO 1	Classify continuou discrete s	a stochast us or discu state space	tic process according rete time and wheth , and give examples	g to whetl er it has a of each ty	ner it operates in continuous or a pe process	Cognitiv	ve l	Inderst	unding			
CO 2	Demonst infinitely	trate limit long period	it probabilities in od	Markov	chains after an	Cognitive Understand						
CO 3	Explain	the concep	ots of birth and death	n process v	vith examples	Cognitiv	ve l	Indersta	unding			
CO 4	Demonst	t rate to re	cognize the concepts	s of renew	al process	Cognitiv	Understa	anding				
CO 5	Explain	in detail th	ne utility of martinga	ales		Cognitiv	Indersta	unding				
Elements Stochasti matrices	of Stoch c processo of a Marko	astic Proc es – Marl ov chain -	esses-Two simple of kov Chains-Definition classification of stat	examples ions – Ex es of a Ma	of Stochastic Pro- amples of Marko rkov chain-Recurr	cesses-Cla ov Chain- rence.	ssificat Transiti	on of on pro	general pability			
UNIT 2								9 -	- 3			
The basi Absorption	c limit the on probabi	eorem of lities - crit	Markov chains and teria for recurrence-	application	ons-Discrete renev Example.	wal equati	on-proc	of of th	eorem-			
UNIT 3								9 -	- 3			
Classical more abc death pro	Examples out Poissor cesses-Exa	of contin processea amples of	uous time Markov s- A counter model birth and death proc	chains-Ge birth and o esses.	neral pure birth pi leath processes-Di	rocesses a ifferential	nd Pois equation	son pro ns of bi	cesses- rth and			
UNIT 4								9 -	- 3			
Renewal Processes	processes s – More o	- Definit n some sp	tion of Renewal proce	ocess and esses – Rei	related concepts newal equations an	– Some of delement	example ary Ren	es of R ewal th	enewal eorem.			
UNIT 5 9+3												
Martingal sampling	theorem.	ninary de	finitions and examp	oles – Sup	er martingalesand	l Sub mart	ingales-	The op	otional			
LEC	TURE	45	TUTORIAL	15	PRACTICAL	0	TOTA	L	60			
Text Boo	ok		I									
1. A Fir New	 A First course in Stochastic Processes - Second Edition by Samuel Karlin and M. Taylor, Academic Press New York.2003. 											

References

- 1. "Stochastic Processes" S.K.Srinivasan and K.M.Mehata, Tata Mcgraw Hill Publishing Company Ltd., New Delhi.1978.
- 2. "Stochastic Processes", 2e, Medhi, John Wiley & Sons (Asia) Pte Ltd ,2000.
- **E-References**

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http://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=2145&context=graduatereports.

COs VS POs											
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2
CO 1	3	2	1	0	0	2	2	2	3	2	0
CO 2	3	2	1	0	0	2	2	2	3	2	0
CO 3	3	2	1	0	0	2	2	2	3	2	0
CO 4	3	2	1	0	0	2	2	2	3	2	0
CO 5	3	2	1	0	0	2	2	2	3	2	0
TOTAL	15	10	5	0	0	10	10	10	15	10	0
SCALED VALUE	3	2	1	0	0	2	2	2	3	2	0
0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation											
$1 \text{-} 5 \rightarrow 1, 6 \text{-} 10 \rightarrow 2, 11 \text{-} 15 \rightarrow 3$											

C	ourse	Т	P	С							
C	ourse	Code	XUM005	1	0	0	1				
С	Р	Α		L	Т	SS	Н				
1	0	0		1	0	1	1				
Prere	quisite	e	Basic Programming knowledge and technical skills.								
On su	ccessf	ul completi	ion of this course, the students will be able to:								
			Course Outcomes	Dom	ain	L	evel				
CO 1	1	Understand	I the fundamentals of Cyber Security and the technologies.	Cogni	itive	Under	standing				
CO 2	1	Understand	the organizational structure of Cyber security	Cogni	itive	Unders	standing				
CO 3	l	Understand	I the Cyber Security policy development	Cogni	itive	Unders	standing				
CO 4	1	Understand	the Indian IT act and the initiatives	Cogni	itive	Unders	standing				
CO 5	1	Understand	and Apply the Cyber security practices	Cogni	itive	Applying					
UNIT	UNIT 1 INTRODUCTION 3+3										
Cyber Policy – Proc	Secur v – Tec luctivi	ity – Cyber hnology Op ty – Interne	 Security policy – Domain of Cyber Security Policy – Laws berations – Technology Configuration – Strategy Versus Polic t – E commerce – Counter Measures – Challenges 	and Re cy – Cy	gulati ber Se	ons – E curity E	nterprise volution				
UNIT	2	CYBER SE	CURITY OBJECTIVES AND GUIDANCE			3	+3				
Cyber Comn Guida Goals Taxon	Secur nerce so nce fo – Cy nomy.	ity Metrics Systems – r Decision I ber Security	 Security Management Goals – Counting Vulnerabilities Industrial Control Systems – Personal Mobile Devices – Makers – Tone at the Top – Policy as a Project– Cyber Secur y Documentation – The Catalog Approach – Catalog Formation 	– Secu Security ity Mar mat – (urity F y Polio agemo Cyber	ramewo cy Obje ent – Ar Securit	orks – E ectives – riving at y Policy				
UNIT	3	CYBER SE	CURITY POLICY CATALOG			3	+3				
Cyber and M – Priv Welfa	Cyber Governance Issues – Net Neutrality – Internet Names and Numbers – Copyright and Trademarks – Email and Messaging – Cyber User Issues – Malvertising – Impersonation – Appropriate Use – Cyber Crime – Geo location – Privacy – Cyber Conflict Issues – Intellectual property Theft – Cyber Espionage – Cyber Sabotage – Cyber Welfare – Computer Forensics – Steganography										
UNIT	UNIT 4CYBER SECURITY INITIATIVES AND IT ACT3+3										
Count Securi Infrast Introd	Counter Cyber Security Initiatives in India, Cyber Security Exercise, Cyber Security Incident Handling, Cyber Security Assurance, IT Act, Hackers–Attacker–Counter measures ,Web Application Security, Digital Infrastructure Security ,Defensive Programming. Traditional Problems Associated with Computer Crime, Introduction to Incident Response.										
UNIT	5 5	SECURITY	PRACTICES			3+3					

Guidelines to choose web browsers, Securing web browser, Antivirus, Email security ,Guidelines for setting up a Secure password ,Two-steps authentication ,Password Manager ,Wi-Fi Security ,Guidelines for social media										
security Tips and best	t practices	for safer Sc	n ,1 assuv ocial Netw	orking.	501,001 II	Security	,Guiden	11105 101 5	oolar moula	
Basic Security for W	/indows_1	User Accou	int Passw	ord Intro	duction to	mobile S	Smartphc	one Securi	tv. Android	
Security. IOS Securit	v Onlin	e Banking	Security	. Mobile	Banking	Security	.Security	of Debit	and Credit	
Card UPI Security	Security of	of Micro Al	TMs e-v	vallet Sec	urity Guide	elines S	ecurity (Guidelines	for Point of	
Sales(POS)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~									
Lecture	15	Tutoria	1 0		SS	15	5	Total	30	
Text Books									l	
1. Jennifer L. Bayuk, J. Healey, P. Rohmeyer, Marcus Sachs, Jeffrey Schmidt, Joseph Weiss										
"Cyber Security Policy Guidebook" John Wiley & Sons 2012.										
2. Rick Howard "Cy	/ber Secur	ity Essentia	ls" Auerb	ach Public	cations 201	1.				
3. Cyber Laws & Inf	ormation 7	Fechnology	, Jothi Rat	han, Vijay	yRathan, Bl	nrath Pubi	ishers,7 th	¹ Edition Ja	anuary 2019.	
References										
1.Modern Cyber secu	urity Pract	ices by Pase	cal Ackern	nan, BPB	Publicatio	ns,2020				
2. Dan Shoemaker C	yber secu	rity The Ess	ential Boo	ly Of Kno	wledge, 1s	t ed. Ceng	gage			
Learning 2011										
3. Rhodes–Ousley, N	lark, "Info	ormation Se	curity: The	e Complet	e Referenc	e", Secon	d Editior	n, McGraw	–Hill, 2013.	
E -References										
1. <u>https://www.cour</u>	rsera.org/s	pecializatio	ns/cyber-	security						
2. www.nptel.ac.in										
3. <u>http://professiona</u>	al.mit.edu/	programs/sl	hort-prog	ams/appl	ied-					
<u>cybersecurityhttp</u>	s://us.nort	on.com/inte	ernetsecur	ity-how-1	to-cyber-se	ecurity-be	est-pract	tices-for-e	employees.	
<u>html</u>										
4. <u>https://www.mei</u>	ty.gov.in/c	content/cybe	er <u>laws</u>							
			CO	Os vs POs						
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	
CO1	0	0	0	0	0	2	0	3	0	
CO 2	0	0	0	0	0	0	2	0	0	
CO 3	3	0	0	0	0	2	3	0	3	
CO 4 0										
COS 3 0 0 0 0 0 0 3										
TOTAL 6 0 0 0 4 5 3 6 OCALED MALUE 0 0 0 0 0 1										
SCALED VALUE 2 0 0 0 1 1 1 2										
\mathbf{U} - No Relation, $\mathbf{I} - \mathbf{L}$	low Relat	ion, 2- Med	lium Kela	tion, 3- H	ligh Kelati	on				
$1-5 \rightarrow 1, 6-10 \rightarrow 2, 11$	$-15 \rightarrow 3$									