



Criterion 1 – Curricular Aspects

Metric	1.1.3	Average percentage of courses having focus on employability/ entrepreneurship/ skill development offered by the Mathematics

DEPARTMENT OF MATHEMATICS

SYLLABUS COPY OF THE COURSES HIGHLIGHTINGTHE FOCUS ON EMPLOYABILITY/ ENTREPRENEURSHIP/ SKILL DEVELOPMENT

1. List of courses for the programmes in order of

S. No.	Programme Name
i.	Bachelor of Science (Mathematics)
ii.	Master of Science (Mathematics)

2. Syllabus of the courses as per the list.

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Legend	Words highlighted with Blue Color	-	Entrepreneurship
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Words highlighted with **Red Color** - Employability

Words highlighted with Green Color - Skill Development

1. List of Courses

Name of the Course	Course Code	Year of Introduction	Activities/Content with direct bearing on Employability/
			Entrepreneurship/ Skill development
	B.Sc. Ma	athematics	
Tamil - I	XGT101	2022-23	Employability: Assignment & Seminar. To acquire basic Learning skills
English - I	XGL102	2022-23	Employability: Assignment & Seminar. To acquire basic Learning skills
Differential Calculus and Trigonometry	XMT103	2022-23	Employability: Assignment, Seminar and Quiz
Analytical geometry 3-D and Integral Calculus	XMT104	2022-23	Employability: Assignment, Seminar and Quiz
Physics – I	XPG105	2022-23	Employability: Assignment, Seminar and Quiz
Physics Practical - I	XPG106	2022-23	Employability: Assignment, Seminar and Quiz
Human Ethics. Values, Rights and Gender Equality	XUM001	2022-23	Employability: Assignment, Seminar and Group discussions
Tamil – II	XGT201	2022-23	Employability: Assignment & Seminar. To acquire basic Learning skills
English – II	XGE202	2022-23	Employability: Assignment & Seminar. To acquire basic Learning skills
Classical Algebra	XMT203	2022-23	Employability: Assignment, Seminar and Quiz
Sequence and Series	XMT204	2022-23	Employability: Assignment, Seminar and Quiz
Physics – II	XPG205	2022-23	Employability: Assignment, Seminar and Quiz
Physics Practical - II	XPG206	2022-23	Employability: Assignment, Seminar and Quiz
Quantitative Aptitude – I	XMT207	2022-23	Skill Enhancement: Seminar: To learn about aptitude and reasoning
Environmental Studies	XUM002	2022-23	Employability: Miniproject, Seminar and Group discussions

Logic and Sets	XMT301	2018-19	Employability: Assignment, Seminar and Quiz
Programming in C	XMT302	2018-19	Employability: Assignment, Seminar and Quiz
Real Analysis	XMT303	2018-19	Employability: Miniproject, Seminar and Group discussions
Analytical Geometry 3D	XMT304	2018-19	Employability: Miniproject, Seminar and Group discussions
Open Elective Practical Accounting	XCOOE1	2018-19	Skill Enhancement: Seminar: To learn about aptitude and reasoning
Open Elective Digital Imaging and Editing Techniques	XCAOE2	2018-19	Skill Enhancement: Seminar: To learn about aptitude and reasoning
Programming in C – Practical	XMT305	2018-19	Employability: Miniproject, Seminar and Group discussions
Disaster Management	XUM306	2018-19	Employability: Assignment, Seminar and Quiz
Theory of Equations	XMT401	2018-19	Employability: Assignment, Seminar and Quiz
Introduction to Matlab	XMT402	2018-19	Employability: Miniproject, Seminar and Group discussions
Vector Calculus and Fourier Series	XMT403	2018-19	Employability: Assignment, Seminar and Quiz
Algebra	XMT404	2018-19	Employability: Assignment, Seminar and Quiz
Color Theory and Paints	XAROE3	2018-19	Skill Enhancement: Seminar: To learn about aptitude and reasoning
Introduction to Matlab - Practical	XMT405	2018-19	Employability: Assignment, Seminar and Quiz
Probability and Statistics	XMT501	2018-19	Employability: Assignment, Seminar and Quiz
Matrices	XMT502A	2018-19	Employability: Assignment, Seminar and Quiz
Discrete Mathematics	XMT502B	2018-19	Employability: Assignment, Seminar and Quiz
Numerical Methods	XMT503A	2018-19	Employability: Assignment, Seminar and Quiz
Mechanics	XMT503B	2018-19	Employability: Assignment, Seminar and Quiz

Linear Algebra	XMT504A	2018-19	Employability: Assignment, Seminar and Quiz		
Astronomy	XMT504B	2018-19	Employability: Assignment, Seminar and Quiz		
Programming in Python	XCAOE6	2018-19	Skill Enhancement: Seminar: To learn about aptitude and reasoning		
Multimedia Design and Development	XCSOE4	2018-19	Skill Enhancement: Seminar: To learn about aptitude and reasoning		
Graph Theory	XMT601	2018-19	Employability: Assignment, Seminar and Quiz		
Complex Analysis	XMT602A	2018-19	Employability: Assignment, Seminar and Quiz		
Number Theory	XMT602B	2018-19	Employability: Assignment, Seminar and Quiz		
Linear Programming	XMT603A	2018-19	Employability: Assignment, Seminar and Quiz		
Stochastic Processes	XMT603B	2018-19	Employability: Assignment, Seminar and Quiz		
Project	XMT604	2018-19	Employability: Project		
	M.Sc. Ma	thematics			
Algebra - I	YMA101	2022-23	Employability: Assignment, test and case study.		
Real Analysis - I	YMA102	2022-23	Employability: Assignment, test and case study.		
Graph Theory	YMA103	2022-23	Employability: Assignment, test and case study.		
Ordinary Differential Equations	YMA104	2022-23	Employability: Assignment, test and case study.		
Optimization Techniques	YMA105	2022-23	Employability: Assignment, test and case study.		
Fuzzy sets and Fuzzy logic	YMA1E1	2022-23	Skill Enhancement: Seminar: To learn about application of Fuzzy sets and Fuzzy Logic		
Coding Theory	YMA1E2	2022-23	Skill Enhancement: Seminar: To learn about application of coding theory		
Neural Networks	YMA1E3	2022-23	Skill Enhancement: Seminar: To learn about application of neural networks		
Algebra -II	YMA201	2022-23	Employability: Assignment, test and case study.		

Real Analysis -II	YMA202	2022-23	Employability: Assignment, test and case study.
Partial Differential Equations	YMA203	2022-23	Employability: Assignment, test and case study.
Classical Dynamics	YMA204	2022-23	Employability: Assignment, test and case study.
Fluid Dynamics	YMA2E1	2022-23	Employability: Assignment, test and case study.
Combinatorics	YMA2E2	2022-23	Employability: Assignment, test and case study.
Cryptography	YMA2E3	2022-23	Skill Enhancement: Seminar: To learn about application of cryptography
Computer Programming (C++ Theory and Lab)	YMA205	2022-23	Skill Enhancement: Seminar: To learn about application of cryptography
Field Theory	YMA301	2014-15	Employability: Assignment, test and case study
Topology	YMA302	2014-15	Employability: Assignment, test and case study.
Automata Theory	YMA303	2020-21	Employability: Assignment, test and case study
Mathematical Statistics	YMA3E1	2014-15	Skill Enhancement: Seminar: To learn about application of mathematical modeling
Data Analysis using SPSS	YMA3E2	2020-21	Skill Enhancement: Seminar: To learn about application of elements of stochastic processes
Numerical Methods	YMA3E3	2014-15	Employability: Assignment, test and case study.
Commutative Algebra	YMA3E1	2014-15	Employability: Assignment, test and case study.
Complex Analysis	YMA401	2014-15	Employability: Assignment, test and case study.
Functional Analysis	YMA402	2014-15	Employability: Assignment, test and case study.
Mathematical Modeling	YMA403	2014-15	Skill Enhancement: Seminar: To learn about application of data analysis using SPSS
Project work	YMA404	2014-15	Employability: Assignment, test and case study

2. Syllabus of the courses

B.Sc (MATHEMATICS)

			Dise (minimized)								
COU	RSE (CODE	XGE102	L	Т	Р	SS	Н	С		
COUI	RSE N	NAME	English - I	3	0	0	0	3	3		
C:P: <i>A</i>	A - 3:0):0						I			
COUI	RSE (DUTCOM	ES:	Don	nain		L	evel			
CO1	Reca	all the basic	grammar and using it in proper context	Cogr	itive	e I	Remei	nber	ing		
CO2	DURSE NAME English - I 3 0 0 0 3 P: A - 3:0:0 DURSE OUTCOMES: Domain Level DI Recall the basic grammar and using it in proper context Cognitive Remember D2 Explain the process of listening and speaking Cognitive Understan D3 Adapt important methods of reading Cognitive Understan UABDE Cognitive Understan Understan LLABUS Cognitive Understan UTI Grammar Grammar Inderstan ijor basic grammatical categories ii. Notion of correctness and attitude to error rection TII Listening and speaking Intelligibility in speaking Intelligibility in speaking portance of listening skills iv. Problems of listening to unfamiliar dialects Aspects of pronunciation and fluency in speaking vi. Intelligibility in speaking Intelligibility in speaking VIT II Basics of Reading Foduction to reading skills viii. Introducing different types of texts – narrative, scriptive, extrapolative Stasses of Viting roduction to writing skills x. Aspects of cohesion and coherence xi. Expanding a given tence without affecting the structure xii. Reorganizing jumbled sentences into a herent paragraph xiii. Drafti		stand	ing							
CO3	Ada	<i>ot</i> importan	t methods of reading	Cogr	itive	;	Cre	ating			
CO4	Dem	onstrate th	e basic writing skills	Cogr	itive	e t	Jnder	stand	ing		
SYLL	ABU	S]	HOU	RS		
UNIT	' I	Grammar	•								
Major	• basic	grammatic	al categories ii. Notion of correctness and attitud	e to er	ror			9			
•		-	-								
UNIT	'II	Listening	and speaking								
Impor	tance	of listening	skills iv. Problems of listening to unfamiliar dia	lects				9			
					ing						
UNIT	III	Basics of 1	Reading								
		-	· · · · ·	narrati	ve,			9			
descrij	ptive,	extrapolati	ve								
UNIT	' IV	Basics of V	Writing								
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compi	annts,	appreciatio	in, conveying sympathes etc.)	1	0 0 main I gnitive Remain gnitive Unde enror Image: Second Sec	ırs	36				
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	9. Sv	wan, Micha	el. (1980). Practical English Usage. Oxford, OU	P							
	10. V	Valter and	Swan (1997). How English Works. Oxford, OU	Р							

10. Walter and Swan (1997). How English Works. Oxford, OUP

Cour	rse Code			L	Т	Р	С
Course Name தமிழ் - I						0	3
Prer	equisite	<u>8</u>	L	Т	Р	Н	
	C:P:A	3:0:0		3	0	0	3
		COURSE OUTCOMES	DOM	AIN		LEVE	L
		After the completion of the course, students will be a	ble to				
C01	Recogni	ize (அடையாளம் காணுதல்) பல்வேறு அறிஞர்	Cognit	ive	Re	meml	ber
	பெருமக் கொள்ள	களின் தொண்டுகளைத் தமிழ்மொழி மூலம் அறிந்து ல்.					
CO2		(தெரிவு செய்தல்) பன்முகப் பரிமாணங்களின் களை இலக்கியங்கள் மூலம் அறிந்து கொள்ளல்.	Cognit	ive	Re	Remember	
CO3		e (விளக்குதல்) தமிழ் மகளிரின் உரையாடல் சிறப்புச் ளை உணர்தல்.	Cognit	ive	Understan		and
CO4		விளக்குதல்) பல்வேறு கலைத்துறைச் சார்ந்த பிரிவுகள், ர் பாடல்கள் குறித்துத் தெளிவு பெறல்.	Cognit	ive	Ap	ply	
CO5	1111111111120	(பகுத்தல்) சிறுகதைகளின் தோற்றம் மற்றும் வளர்ச்சி ரடகங்கள் - கவிதை குறித்துத் தெளிவு பெறுதல்.	Cognit	ive	An	alyze	
அல கு-1	தமிழ் த	றிஞர்களும் தமிழ்த்தொண்டும்			9		
		திதாசன், நாமக்கல் கவிஞர், சி.இலக்குவனார், உ.வே.சாமிந					
		சி சுந்தரம், கவிமணி தேசியவிநாயகம் பிள்ளை தொடர்பான பட்டட்ட வெடர்கள்	செய்த	5கள்,	சிறந்	ந்த	
		ുப்புப் பெயர்கள்.)			
அலகு	5-2	கவிதைகள் (மரபுக்கவிதை, புதுக்கவிதை)	5	1			

மரபுக்கவிதை : முடியரசன், வாணிதாசன், சுரதா, கண்ணதாசன், உடுமலை நாராயண கவி, பட்டுக்கோட்டை கல்யாண சுந்தரம், மருதகாசி தொடர்பான செய்திகள். புதுக்கவிதை : ந.பிச்சமூர்த்தி, சி.சு.செல்லப்பா, மு.மேத்தா, ஈரோடு தமிழன்பன், அப்துல் ரகுமான், ஞானக்கூத்தன், ஆலந்தூர் மோகனரங்கன் தொடர்பான செய்திகள். 			F'										
புதுக்கவிதை : ந.பிச்சமூர்த்தி, சி.சு.செல்லப்பா, மு.மேத்தா, ஈரோடு தமிழன்பன், அப்துல் ரகுமான், ஞானக்கூத்தன், ஆலந்தூர் மோகனரங்கன் தொடர்பான செய்திகள். அலகு-3 உரையாடல்கள், தமிழ் மகளிரின் சிறப்பு 9 ஜி.யு.போப் மற்றும் வீரமாமுனிவரின் தமிழ்ப்பணி, பெரியார், அண்ணா, முத்துராமலிங்கத்தேவர், அம்பேத்கர், காமராசர், மா.பொ.சிவஞானம், காயிதே மில்லத் சமுதாயத் தொண்டு. அன்னி பெசண்ட் அம்மையார், மூவாலூர் ராமாமிர்தம்மாள், டாக்டர் முத்துலட்சுமி ரெட்டி, வேலுநாச்சியார், வள்ளியம்மை, ராணி மங்கம்மாள் சிறப்பு. அலகு-4 நாட்டுப்புறப்பாடல் தாலாட்டுப்பாடல், தொழில் பாடல், ஒப்பாரிப் பாடல். அலகு-5 இலக்கிய வரலாறு 9 உரைநடை, சிறுகதை, நாடகம், கவிதைகள். <u>LECTURE TUTORIAL PRACTICAL TOTAL</u>				லை நாராயண கவி,									
ஞானக்கூத்தன், ஆலந்தூர் மோகனரங்கன் தொடர்பான செய்திகள். அலகு-3 உரையாடல்கள், தமிழ் மகளிரின் சிறப்பு 9 ஜி.யு.போப் மற்றும் வீரமாமுனிவரின் தமிழ்ப்பணி, பெரியார், அண்ணா, முத்துராமலிங்கத்தேவர், அம்பேத்கர், காமராசர், மா.பொ.சிவஞானம், காயிதே மில்லத் சமுதாயத் தொண்டு. அன்னி பெசண்ட் அம்மையார், மூவாலூர் ராமாமிர்தம்மாள், டாக்டர் முத்துலட்சுமி ரெட்டி, வேலுநாச்சியார், வள்ளியம்மை, ராணி மங்கம்மாள் சிறப்பு. அலகு-4 நாட்டுப்புறப்பாடல் தாலாட்டுப்பாடல், தொழில் பாடல், ஒப்பாரிப் பாடல். அலகு-5 இலக்கிய வரலாறு 9 உரைநடை, சிறுகதை, நாடகம், கவிதைகள். LECTURE TUTORIAL PRACTICAL TOTAL	பட்டுக்கோட்டை கல்யா												
அலகு-3 உரையாடல்கள், தமிழ் மகளிரின் சிறப்பு 9 ஜி.யு.போப் மற்றும் வீரமாமுனிவரின் தமிழ்ப்பணி, பெரியார், அண்ணா, முத்துராமலிங்கத்தேவர், அம்பேத்கர், காமராசர், மா.பொ.சிவஞானம், காயிதே மில்லத் சமுதாயத் தொண்டு. அன்னி பெசண்ட் அம்மையார், மூவாலூர் ராமாமிர்தம்மாள், டாக்டர் முத்துலட்சுமி ரெட்டி, வேலுநாச்சியார், வள்ளியம்மை, ராணி மங்கம்மாள் சிறப்பு. 9 அலகு-4 நாட்டுப்புறப்பாடல் தாலாட்டுப்பாடல், தொழில் பாடல், ஒப்பாரிப் பாடல். 9 உரைநடை, சிறுகதை, நாடகம், கவிதைகள். 9 உரைநடை, சிறுகதை, நாடகம், கவிதைகள். 7000000000000000000000000000000000000													
ஜி.யு.போப் மற்றும் வீரமாமுனிவரின் தமிழ்ப்பணி, பெரியார், அண்ணா, முத்துராமலிங்கத்தேவர், அம்பேத்கர், காமராசர், மா.பொ.சிவஞானம், காயிதே மில்லத் சமுதாயத் தொண்டு. அன்னி பெசண்ட் அம்மையார், மூவாலூர் ராமாமிர்தம்மாள், டாக்டர் முத்துலட்சுமி ரெட்டி, வேலுநாச்சியார், வள்ளியம்மை, ராணி மங்கம்மாள் சிறப்பு. அலகு-4 நாட்டுப்புறப்பாடல் தாலாட்டுப்பாடல், தொழில் பாடல், ஒப்பாரிப் பாடல். அலகு-5 இலக்கிய வரலாறு 9 உரைநடை, சிறுகதை, நாடகம், கவிதைகள். LECTURE TUTORIAL PRACTICAL TOTAL													
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	Course	e Name		Differential	Calculus a	nd Trigonom	netry		L	Т	Р	С
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CO 4		the conc	epts of B			inctions	and their	Cogni	tive	Apply	ying
CO 5	Apply	the conce	uate defini pts of mul	tiple integ	gral for fir	nding the	area and	Cogni	tive	Apply	ying
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Course	Name	Physics –I		L	Т	Р	C
Course	e Code	XPG105		3	1	0	4
C P	Α			L	Т	SS	H
4 0	0			3	1	0	4
Prerequis	site	Basic knowledge of physics concepts.		L. L			
On succes	sful compl	etion of this course, the students will be able to:					
		Course Outcomes	Dor	nain]	Level	
CO 1	•	the principles of elasticity, derive expression for couple and determine rigidity modulus of a wire.	Cogi	nitive	Un	nembo derstar d Appl	nd
CO 2		e sound, propagation, perception analysis of al wave and effect echoes in building.	Cogi	nitive	Un	dersta d appl	nd
CO 3		asic concepts of specific heat capacity List the laws odynamics.	Cogi	nitive		ember lerstar	
CO 4	Understa application	and Interference, diffraction and identify their ons.	Cogi	nitive		dersta Analy	
CO 5		e general properties of atoms and nucleus, Discuss us models and A nalyze various applications of X–	Cogi	nitive	Unc	memb lerstar nalyze	nd,
UNIT 1	Elasticit	y				12	
		gidity modulus by Static Torsion method –Bending of n of Young's modulus by non-uniform bending.	f beams	–Expe	rimenta	11 meth 12	
	– Reverber	acteristic of musical sound - Loudness – unit of lou ration – Reverberation time- requirements for good ac					
UNIT 3	Therma	l Physics				12	
verificatio	n - speci	cific Heat of a Liquid by Joule's Electrical Method fic heat capacity of a liquid by cooling– Condu disc method for bad conductors – Black body radiation	iction:	Coeffi	cient o	coolii	ng -
UNIT 4	Optics					12	
and Frau	nhofer dif	mination of thickness of a thin wire by air wedge mathematical problem of thickness of a thin wire by air wedge mathematical fraction — Diffraction grating–Dispersion- Optical practive index and dispersive power of a prism.					
UNIT 5	Atomic a	and Nuclear physics				12	1
ionization	potentials hysics: Nu	ectron - spin quantum numbers – Pauli's exclusion – Photoelectric effect –X – rays: continuous and char aclear size –mass – charge – Mass defect – Bindin clear fission – nuclear fusion– chain reaction –nuclear	acteristi g energ	ic–appl gy – pa	ication	s.	

Lecture	45	Tutoria	l 15	5 P 1	ractical	(0	Total	60
Fext Books			ļ	I		I	Ι		I
1. A Tex	xt book of sou	nd - N. Sub	rahmanya	um and Bi	rjLal. Put	olisher, Vil	kas Publis	hing Hot	ise,
1985									
2. Allie	d physics – A.	Sundaravel	usamy, P	riya Publi	cations, k	Karur-2.			
3. Prope	erties of matter	r – R. Murug	gesan. S	Chand &	Co. Pvt. l	Ltd., New	Delhi. 2		
References									
-	ots of Modern	•					,		
	l Kumar G.,	"Engineerin	ng Physic	cs", 2nd 1	Enlarged	Revised	Edition,	VRB Pu	blishei
Chenna	ui, 2011.								
2-References	MOOC, SW	AYAM, NP	TEL, Wo	ebsites etc	:.]				
1. Biswan	ath Banerjee	and Amit	Shaw,	Departme	nt of C	ivil Engin	eering II	T Khara	agpur,
THEOI	RY OF ELA	ASTICITY"	, Nation	al Progra	mme or	n Technol	logy Enh	anced I	Learnii
(NPTE	L), <u>https://n</u>	otel.ac.in/co	urses/10	5/105/105	5105177/	1			
	, Engineering					-	hysics. If	F. Roork	ee.
Z. NPIEL		•		1	,, = · F ···-	1	•	_,	
2. NPTEI	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO
	PO 1 3	PO2 3	PO3 3	PO4 2	PO5 3	PO6	PO7 1	PO8	PO
CO 1		_							
CO 1 CO 2	3 3 3	3 3 3	3	2	3	1	1	1	1
2. NPTER CO 1 CO 2 CO 3 CO 4	3 3 3 3	3 3 3 3 3	3 3 2 3	2 2 1 3	3 3 3 3	1	1 1 0 2	1	1
CO 1 CO 2 CO 3 CO 4 CO 5	3 3 3 3 3	3 3 3 3 3 3	3 3 2 3 3	2 2 1 3 3	3 3 3 3 3	1 1 1 1 1	1 1 0 2 2	1 1 1	1 1 1
CO 1 CO 2 CO 3 CO 4 CO 5 FOTAL	3 3 3 3	3 3 3 3 3	3 3 2 3	2 2 1 3	3 3 3 3	1 1 1	1 1 0 2	1 1 1 1 1	1 1 1 1
CO 1 CO 2 CO 3 CO 4 CO 5 FOTAL SCALED	3 3 3 3 3 15	3 3 3 3 3 3	3 3 2 3 3	2 2 1 3 3 11	3 3 3 3 3 15	1 1 1 1 1	$ \begin{array}{c} 1 \\ 1 \\ 0 \\ 2 \\ 2 \\ 6 \end{array} $	1 1 1 1 1 1	1 1 1 1 1 1 1
CO 1 CO 2 CO 3 CO 4 CO 5 FOTAL SCALED VALUE	3 3 3 3 3	3 3 3 3 3 15 3	3 3 2 3 3 14 3	2 2 1 3 3 11 3	3 3 3 3 3 15 3	1 1 1 1 1 5 1	1 1 0 2 2	1 1 1 1 1 1	1 1 1 1 1 1

Со	urse	Name		Pl	ysics Pra	actical	- I			L	Т	P	C
Co	ourse	Code			XPG	106				0	0	4	2
С	P	Α								L	Т	Р	Н
0.5	1	0.5								0	0	4	4
Prer	equis	ite	Basic	knowledge of p	hysics co	oncepts			·				
On s	ucces	sful com	pletion of	of this course, t	he studen	ts will	be able to	:					
				Course Outo	omes				Do	omai	in	Lev	vel
CO 1	1	Descrit wave.	be sound	l, propagation,	perceptio	on ana	lysis of ac	oustical	Cog Psyci	gniti hom		Know	ledge
CO	2		• •	nciples of elas and determin	•				Psych Aff	nom ectiv		Analy Mecha Resp	nisn
CO 3	3			pacity, recall cific heat capa		epts of	temperat	ure and	Cog Psycl	gniti hom		Evalu	uate
CO 4	4	-		rence & diffrad		•	is various		Psych	nome	otor	Knowl Mecha	-
CO S	5	Know particle		rmination of v	vavelengt	h and	size of th	e micro	Cog Psycl	gniti hom	ve	Comp sio Evalu	n,
Ex.	No	Experi	ments (Any Eight Ex	periment	s)			I				
1		Torsion	al pend	ılum – Determ	ination of	f the ri	gidity mod	lulus of t	hin wir	e.		CC)2
2	2.	Young'	's modul	us – Non unifo	orm bendi	ng –Pi	n and mici	roscope.				CC	02
3	3.		-	cific heat capa	-							CC	
4	.			pacity of liqui			w of coolin	ng				CC)3
5	5.			Refractive ind								CC)4
6) .	Spectro inciden		rating – a wave	elength of	variou	is spectral	line by r	ormal			CC)4
7	' .	Air wee	dge – Th	ickness of wire	2							CC)4
8	8.	Sonom	eter – ve	rification of la	ws							CC)1
9).	Determ	ination	specific heat ca	pacity us	ing Sp	herical Ca	lorimeter	•			CC)3
1	0.		rating –	Determination	•	0 1				e mi	cro	CC)5
T a	cture	-	0	Tutorial	0		Practical		30		Total		30

Text Books

- C. L. Arora, "B.Sc. Practical Physics", S. Chand & Company Ltd. Ram Nagar, New Delhi, 2007.
 R. K. Shukla & Anchal Srivastava. "Practical Physics," New Age International (P) Ltd, Publishers, New Delhi, 2006.

References

- 1. Indu Prakash and Ramakrishna, "A Text Book of Practical Physics," 11th Edition, KitabMahal, New Delhi, 2011.
- 2. C. Ouseph,K. Rangarajan, "A Text Book of Practical Physics", Volume I & II, S.Viswanathan Publishers, 1997.

E-References

COU	RSE (CODE	XGE202	L	Т	Р	SS	Н	С	
COU	RSEN	IAME	ENGLISH II	2	1	0	0	3	3	
C:P:A	- 3:0	:0		1						
COU	RSEC	OUTCOME	ES:	D	omai	in	Ι	Level		
CO1	Exp	<i>lain</i> the bas	ic grammar and using it in proper context	Co	gniti	ve	Une	Inderstand		
CO2	Cate	egorize the	process of listening and speaking	Co	gniti	ve	A	Analyze		
CO3	Exa	<i>mine</i> the in	portant methods of reading	-	gniti		I	Evalu	late	
CO4			asic writing skills		gniti		(Create	e	
SYLL		<u> </u>	6		0			HO	URS	
UNIT	-I	Advanced	Reading							
iii. Rea iv. Rea gaps; c	ading ading distor	and interpr and unders ted texts.)	of comprehension reting non-linguistic texts tanding incomplete texts (Cloze of varying length	s and	-					
vi. Edi vii. Re viii. Si	alysin iting t e-draf umma ing pl	he drafts ar t a piece of arize a piece trases, idior	r an essay or a report rived at and preparing the final draft text with a different perspective (Manipulation ex e of prose or poetry ns and punctuation appropriately					11	[
UNIT	-III	Principles	of communication and communicative compe	tence						
xi. Tyj xii. Ide xiii. C	pes of entify omm	f communic ing and ove unicative co						11		
UNIT			tural Communication							
xiv. C	ross-c	cultural com	imunication					11		
]	[otal	Ηοι	irs	45	5	

Textbooks

1) Bailey, Stephen(2003). Academic Writing. London and New York, Routledge.

2) Department of English, Delhi University(2006).Fluency in English Part II. New Delhi, OUP3) Grellet, F (1981).Developing Reading Skills: A Practical Guide to Reading Skills. New York, CUP

4) Hedge, T.(2005). Writing. London, OUP

5) Kumar, S and Pushp Lata (2015).Communication Skills. New Delhi, OUP

6) Lazar, G.(2010).Literature and Language Teaching. Cambridge, CUP

7) Nuttall, C(1996). Teaching Reading Skills in a Foreign Language. London, Macmillan

8) Raman, Meenakshiand Sangeeta Sharma (2011). Technical Communication: Principles and Practice. New Delhi, OUP

Table1: Mapping of Cos with POs:

	PO	PO	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO1	PO1	PSO	PSO
	1	2								0	1	2	1	2
CO1	2	0	0	0	0	0	2	0	1	0	0	0	0	0
CO2	2	0	0	0	0	0	2	0	1	0	0	0	0	0
CO3	1	0	0	0	0	0	1	0	1	0	0	0	0	0
CO4	2	0	0	0	0	0	1	0	1	0	0	0	0	0
Total	7	0	0	0	0	0	6	0	4	0	0	0	0	0
Scal	2	0	0	0	0	0	2	0	1	0	0	0	0	0
edV														
alue														
	1	0	0	0	0	0	1	0	1	0	0	0	0	0

1-5=1, 6-10 = 2, 11-15=3

0			-			-
Course C	ode	XGT201	L	т	P	C
Course N	ame	தமிழ்-11	2	1	0	3
Prerequi	site		L	т	P	н
C:P:A		3:0:0	2	1	0	3
	COURSE	OUTCOMES	DOI	MAIN		LEVEL
	_	After the completion of	the course, s	students will	be able to	
CO1	Recogn	ize (அடையாளம் காணு	தல்) பல்வேறு	Sectoration	Cognitive	Remember
		ஸ், கலைச்சொல்லாக்க 1		ன்றவற்றைச்		
	தமீழ்மெ	ாழி மூலம் அறிந்து வெ	वीबार्क.			
CO2		(தெரிவு செய்தல்) வடவெ			Cognitive	Remember
		நிந்து, பழந்தமிழ் இலக்	கியங்கள் மூ	லம் அறிந்து		
	Gardier					
CO3	Describ	e (வீளக்குதல்) தீருக்கு	றள் மூலம் ச	\$ CDC	Cognitive	Understand
	செய்திக	ளை உணர்தல்.				
CO4		வீளக்குதல்) பல்வேறு (த கடிதப்	Cognitive	Apply
	ជាស្វែតខា	. குறீத்துத் தெளிவு பெ	றல்.			
CO5		(பகுத்தல்) கலைகளில்			Cognitive	Analyze
		தலை சமுதாயப் பங்கு <u>க</u>	தறித்துத் தெள	1வு பெறுதல்.		
.amg-1	Sector	mb				9
		Kampano afiku anos	LAN, GERTRIKAN	nt Candomen	t nation of main	i through distriction
சந்தீப்பிழை	யை நீக்கு	ஙாலலை எடுந்து எழுர நூல், ஒருமை பல்லை ப எ நீக்குதல்.				and the second second
ទត្រទំណិតល្អ ជាអ្នណាទ្រិត សារសុខ	யை நீக்கு சொற்கண	தல், ஒருமை பல்மை 1 எ. நீக்குதல். ம்சொல் அந்தல்	ിന്നുക്കണ 🖇	க்குதல், மர	ப் பிழைகள்	- வருஉர்சொல் - 9
ទត្រទំណិតល្អ ជាអ្នណាទ្រិត សារសុខ	யை நீக்கு சொற்கண	தல், ஒருமை பல்மை i எ நீக்குதல்.	ിന്നുക്കണ 🖇	க்குதல், மர	ப் பிழைகள்	- வருஉர்சொல் - 9
சந்தீப்பிழை பிறமொழிச் அங்கிலச் 6	ை நீக்கு சொற்கண (கே ரொல்லுக்கு	தல், ஒருமை பல்மை 1 எ. நீக்குதல். ம்சொல் அந்தல்	1ழைகளை ந ல அநிதல் - ஒ	க்குதல், மரப விவேறபாடர	ப் பிழைகள் நிது சரியான	- ஷூஉச்சொல் - 9 பொருளை அறிதல்,
சந்தீப்பிழை பிறமொழிச் வாது-2 ஆங்கிலச் 6 ஒரேருந்து	ை நீக்கு சொற்கண சொற்கண பால்லுக்கு ஒருமோழீ பி, அவு	.நல், ஒருமை பல்லை ப எ நீக்குதல். ர்ச்சோல் அதேல் , நேரான தமீழ்ச் சோல்வ க்குரிய பொருளைக் எ வரிரைப்படுத்துதல்.	1ழைகளை ந ல அநிதல் - ஒ	க்குதல், மரப விவேறபாடர	ப் பிழைகள் நிது சரியான	- ஷூஉச்சொல் - 9 பொருளை அறிதல்,
சந்தீப்பிழை பிறமொழிச் அங்கிலச் 6 ஒரேழுத்து தொற்றபை அன்கு3	ைய நீக்கு சொற்கனை சொற்கனை சந்தொழி அருமொழி யி, அவர	.நல், ஒருமை பல்லை ப எ நீக்குதல். ம்போல் அதேல் , நேரான தமிழ்ச் சோல்வ கருரிய பொருளைக் எ வரிரைப்படுத்துதல். ம க்கியல்	3ழைகளை ந ல அநிதல் - ஒ வடதிதல் -	க்குதல், மரப விவேறுபா.ர வேர்ச்சொல்	ப் பிழைகள் நிந்து சரீயான வினைமுற்ற	- எழுடிப்போல் - 9 பொருளை அறிதல், ந–வினைபேர்ரல் - 9
சந்தீப்பிழை பிறமொழிச் கூடியிலச் செ செடிருந்து தொழிற்பொ காதூ திருக்குறள்	ை நீக்கு சோற்கணை சொல்லுக்கு ஒருமோழீ யர், அரை தொடர்பான	தல், ஒருமை பல்லை ப எ நீக்குதல். ர்ச்சோல் அதேல் , நேரான தமிழ்ச் சோல்வ க்குரிய பொருளைக் எ வரிரைப்படுத்துதல். பக்கியம் எ செய்றிகள் மேற்கோன்	3ழைகளை ந ல அநிதல் - ஏ வடநிதல் - டன் தொடரை	க்குதல், மரப விவேறுபாடர வேர்ச்சொல் நீரப்புதல், அ	ப் பிழைகள் நிந்து சரியான வினைமுற்ற ஸ்டி பண்டி கல	- வருடைச்சொல் - 9 பொருளை அறிதல், நு–வினைபேச்சல் - 9 ல்வி, கேள்வி, அறிவு
சந்தீப்பிழை பிறபொழிச் கண்கு-2 ஆங்கிலச் 6 ஒரேழுந்து தோழீற்பொ கண்கு-3 தீருக்குறவி ஆட்க்கம், ஒ	பை நீக்கு சொற்கணை சால்லுக்கு குருமோழீ யர், அரை தொடர்பால முக்கல், வெ	.நல், ஒருமை பல்லை 1 எ நீக்குதல். ம்போல் அதேல் , நேரான தமிழ்ச் சோல்வ க்குரிய பொருளைக் எ வரிரைப்படுத்துதல். ம க்கியம் எ செய்திகள் மேற்கோன் பாறை, நட்டி, கேள்வி, அ	வேழகளை நீ ல அந்தல் - ஒ வடந்தல் - கள் தொடரை நீவு - வாப்பை	க்குதல், மரட விவேறுபா.ர வேர்ச்சொல் தீரப்புதல், அட , காலம், அரக்	ப் பிழைகள் நீந்து சரீயான வினைமுற்ற வினைமுற்ற ப்பு, பண்டி, கல கழுடையை, நி	- வழுடைச்சொல் - 9 பொருளை அறீதல், நு–வினைபேச்சல் - 9 ல்வி, கேள்வி, அறிவு, இன்ன செய்யாமை.
சந்தீப்பிழை பிறபொழிச் காழூ2 ஆங்கிலச் 6 ஓரெழுந்து தொழீழ்போ காழூ7 திருக்குறன் அரைசல்கள்	பை நீக்கு சொற்கணை சால்லுக்கு குருமோழீ யர், அரை தொடர்பால முக்கல், வெ	தல், ஒருமை பல்லை ப எ நீக்குதல். ர்ச்சோல் அதேல் , நேரான தமிழ்ச் சோல்வ க்குரிய பொருளைக் எ வரிரைப்படுத்துதல். பக்கியம் எ செய்றிகள் மேற்கோன்	வேழகளை நீ ல அந்தல் - ஒ வடந்தல் - கள் தொடரை நீவு - வாப்பை	க்குதல், மரட விவேறுபா.ர வேர்ச்சொல் தீரப்புதல், அட , காலம், அரக்	ப் பிழைகள் நீந்து சரீயான வினைமுற்ற வினைமுற்ற ப்பு, பண்டி, கல கழுடையை, நி	- வழுடைச்சொல் - 9 பொருளை அறிதல், நு–வினைபேச்சல் - 9 லவி, கேஸ்வி, அறிவு இன்ன செய்யாமை.
சந்தீப்பிழை பிறபொழிச் காரு-2 ஆங்கிலச் 6 ஒரேழுந்து தோழீற்போ காரு-3 தீருக்குறவி ஆடக்கம், ஒ	ை நீக்கு சொற்கன ரோல்லுக்கு ரைமோழீ யி. அவர தொடர்பாச குதாடர்பாச முக்கம், பெ 1: நாலையா	. நல், ஒருமை பல்லை (எ. நீக்குதல், க்ச்சோல் அதேல் , நேரான தமீழ்ச் சோல்ல க்குரிய பொருளைக் எ விரைப்படுத்துதல், பக்கியம் எ செய்திகள் மேற்கோன் பாரை, நட்டி, கேள்வி, அர (), நான்மனிக்கடிகை, ப	வேழகளை நீ ல அந்தல் - ஒ வடந்தல் - கள் தொடரை நீவு - வாப்பை	க்குதல், மரட விவேறுபா.ர வேர்ச்சொல் தீரப்புதல், அட , காலம், அரக்	ப் பிழைகள் நீந்து சரீயான வினைமுற்ற வினைமுற்ற ப்பு, பண்டி, கல கழுடையை, நி	- வழுடைச்சொல் - 9 பொருளை அறீதல், நு–வினைபேச்சல் - 9 ல்வி, கேள்வி, அறிவு, இன்ன செய்யாமை.
சந்தீப்பிழை பிறமொழிச் ஆங்கிலச் 6 ஒரேழுத்து தொழீற்போ சாதே3 நீருக்குறவி அழைக்கவ் சோப்திகள் கோழ்திகள் காத்4	பை நீக்கு சொற்கன ரோல்லுக்கு ரைமோழி யி. அவர தொடர்பாச முக்கம், பெ ட நாலையா	தல், ஒருவை பல்லை ப ஸ் நீக்குதல். ஸ் ரோன தமீழ்ச் சொல்லை க்குரிய பொருவைக் வ வரிசைப்படுத்துதல். ஸ் கியல் எ செய்திகள் மேற்கோன் பாறை, நட்டி, கேன்வி, அர ம், நான்மணிக்கடிகை, ப ஸ்பாட்டுத்தல்	ிழைகளை நீ ல அநிதல் - ஒ வடநிதல் - என் தொடரை செ எ ஹாடரை திஷ என்பியை ஓமொழி, திர்	க்குதல், மரட விவேறுபாடர வேக்கோல் நிரப்புதல், அட நிரப்புதல், இன்ன நிரல், இன்ன	ப் பீழைகள் நீந்து சரீயான விலைமுற்ற கிலலம் கிலலமுற்ற கிலலமுற்ற கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கில கிலலம் கிலலம் கில கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கில கிலலம் கிலலம் கில கிலலம் கில கிலலம் கிலலம் கில கில கிலலம் கில கில கிலலம் கிலலம் கில கிலலம் கிலலம் கிலல கிலலம் கிலலை கிலலம் கில கிலலம் கிலலம் கிலலம் கிலலம் கில கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கிலலம் கிலலமை கிலலம் கில கிலலம் கிலலம் கிலலம் கிலலம் கில கில கிலலம் கில கில கில கில கில கில கில கில	- வழுடைச்சொல் - 9 பொருளை அறிதல், நு–வீனையேச்சல் - 9 ல்வி, கேள்வி, அறிவு, இன்ன செய்யாமை, டல்கள் தொடர்பான 9
சந்தீப்பிழை பிறமொழிச் ஆங்கிலச் 6 ஒரேஞ்சுது தொழிற்பெட சுரைக்குற திருக்குறவி அருதல்கவி செய்திகள் காழ்தீக அறுகல்கவி சைப்திகள் காழத4	பை நீக்கு சோற்கண சொல்லுக்கு ஒருமொழி யி. அதை தேருடிப்படி முக்கல், பெ ட நாலையா பா கடிதும்,	தல், ஒருமை பல்லை (பிற்றோல் அந்தல்) பிற்றோல் அந்தல் பிற்றோல் அந்தல் பிற்றால் அந்துதல் பிற்றால் பேற்றோல் பாறை, நட்பு, மேல்வி, அர பி, நால்பணிக்கடிகை, ப பியாட்டுத்தலி ஆசிரியர் கடிதல், நாலா	ிழைகளை நீ ல அநிதல் - ஒ ண்டறிதல் - கள் தொடரை நீவு - வாப்பை ழமொழி, தீரில் காப் பணி, தீ	க்குதல், மரட விவேறுபாடர வேர்ச்சோல் தீரப்புதல், அட , காலம், அட நிரப்புதல், இன்ன மப்ப்புத் திரு	ப் பிழைகள் நீந்து சரியான வினைமுற்ற ப்பு, பண்டி, கச கழுடைமை, ந சா நாற்பது பா நீத்தல், வினம்	- வரூட்சனேல் - 9 பொருளை அறீதல், நு–வினைபேச்சல் - 9 ல்வி, கேள்வி, அறிவு இன்ன செய்யாமை, டல்கள் தொடர்பான 9 பரத் தமிழ்
சந்தீட்டின் பிறமொழிச் அங்கிலச் தே ஒரேலுக்கு தொழிற்பெட அன்குர் அன்குக்குர் அன் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன்குர் அன் அன்குர் வுர் வுரு வுரு வுரு வுருரு வு வுரு வுரு வு வுரு வு வுரு வு வுரு வு வுரு வுரு வு வுரு வு வுரு வு வுரு வுரு வு வுரு வு வுகு வு வு வு வு வு வு வு வுரு வு வுரு வு வு வு வு வு வு வு வு வு வ	பை நீக்கு சோற்கண ரொல்லுக்கு ஒருமொழி யி, அரை தொடர்பாச முக்கல், பெ நாலையா ப	தல், ஒருமை பல்லம் ப பிற்றோல் அந்தல். பிற்றோல் அந்தல் நேரான தமிழ்ச் சொல்ல கருரிய பொருளைக் வ விரைப்படுத்துதல். விண்டப்படுத்துதல். விண்டுக் மேற்கோன் பாறை, நட்பு, கேள்வி, அர பி, நான்மனிக்கடிகை, ப பாப்புத்துகி ஆரிர்பர் கடிதல், நான கிறை கணைசில் கல்	ிழைகளை ந ல அநிதல் - ஒ னடறிதல் - பல் தொடரை நிவு - வாப்பை ழமொழி, திரில காப் பனி, G	க்குதல், மரட விவேறுபாடர வேர்ச்சோல் திரப்புதல், அட நிரப்புதல், இன்ன மர்ப்புத் திரு	ப் பீழைகள் நீந்து சரீயான வினைமுற்ற ப்பி, பன்பு, கச கழுடைமை, ந நாற்பது பா நீத்தல், விளம்	- வரூடிச்சொல் - 9 : பொருளை அறிதல், 19–வினையேச்சல் - 9 ல்வி, கேள்வி, அறிவு, இல்னா செய்யாமை, டல்கள் தொடர்பான 9 பரத் தமிழ் 9
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	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	2	3	1	1	1	1
CO 3	3	3	3	2	3	1	1	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	10	15	5	5	5	5
SCALED	2	3	3	2	3	1	1	1	1
VALUE	5	3	3	<u> </u>	5	1	I	1	I
0 - No Relation	, 1 – Low R	elation, 2-	Medium	Relation,	3- High I	Relation			
$1-5 \to 1, 6-10-$	$\rightarrow 2, 11\overline{-15} \rightarrow$	3							

С	ourse	Name	Sequence and Series	L	Т	Р	C
C	ourse	Code	XMT204	3	1	0	4
С	Р	Α		L	T	SS	H
4	0	0		3	1	0	4
Prer	equis	ite	Basic knowledge of numbers.				
On s	uccess	ful compl	etion of this course, the students will be able to:				
			Course Outcomes	Dom	ain	Leve	el
CO	1	Detern oscillat	nine if an infinite sequence is bounded, monotonic or ing	Cogni	tive	Evalua ng	ati
CO	2		nine the series whether it is convergent or divergent by ne appropriate tests.	Cogni	tive	Under nding	sta
CO	3	Detern using th	nine the series whether it is convergent or divergent by ne appropriate tests.	Cogni	tive	Evalua ng	ati
CO	4	Identif	y the sequence of partial sum for a given infinite series	Cogni	tive	Apply	ing
CO UNI			strate the concepts about the Weirstrass inequalities and s's inequality	Cogni	tive	Under nding 12	
UNI Som <mark>Cau</mark> o	T 2 e gene chy's c	ral theore	hit, finite or infinite. ms concerning infinite series – series of positive terms – com on test – D-Alembert's ratio test - Definition of convergence ry condition for convergence- convergence of $\sum \frac{1}{n^p}$ and Geo	, Diverg	gence a	and	
UNI			$\sum_{n^p} n^p$. 12	
		oot test ar	nd their simple problems - Raabe's test – Absolutely converge	ent serie	es - Al		ve.
	s with	simple pr				12	
Sum UNI		n of series	– Summation by different series – recurring series.			12	
-	ualitie ecture	i i	tric and Arithmetic means- Weirstrass inequalities- Cauchy's45Tutorial15Practical0	inequa	lity. Tota	al	60
	t Book		ne I, T.K.M. Pillay, T. Natarajan and K.S.Ganapathy, S. V	liswana	than (Printer	. <i>R</i>
	-	shers) Pvt Unit I Unit I Unit I	 Ltd., 2015. Chapter 2 (Sec: 4 – 7), Pages: 20 - 40 I :Chapter 2 (Sec: 8 – 16), Pages: 41 - 68 II:Chapter 2 (Sec: 17 – 19, 21 – 24), Pages: 68 - 88 V:Chapter 5 (Sec: 1 – 7), Pages: 246 – 281 		(Printers	

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			CO	s vs POs					
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	3	3	3	1	2	1	1
CO 2	3	3	2	1	3	1	0	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	2	1	3	1	0	1	1
TOTAL	15	15	13	11	15	5	5	5	5
SCALED	2	2	2	2	2	1	1	1	1
VALUE	5	3	3	3	3	1	1	1	1
0 - No Relation,	1 – Low Rel	lation, 2- I	Medium F	Relation, 3	- High R	elation			

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

CO 1 R ar pCO 2 R st: m CO 3 R di CO 4 E co CO 5 II al UNIT I E Ohms law - series and p specific resi Electromagn coil. UNIT II I Biot–Savart magnetic in magnetic in magnetic o wave and I	A 0.4 te Basic ful completion of Recall Ohms ndapply knowl otentiometer. Recall Biot–Sa traight conduct nagnetic materia Recall basic of iodes and their Examine the so onversion amo operation of all t llustrate reduc lgebra and k-ma ELECTRICITY – Law of resis parallel – Kirch istance - Potent gnetic induction	Course Outcon law, learn ab edge to calib vart's law, exp or, coil and dis als. semiconductor applications. structure of nu ong different n he gates. ction of logical ap. <u>X</u> tance in series i hoff's laws – Wl iometer – Princip	e students will be abl	capacitors ter using ag through operties of at types of rform the ad discuss g Boolean c resistance – Carey Foster		Und Rer und an Und A Und A S: capa	0 SS 0 Level dersta nalyze dersta apply dersta Apply 9+3	nd er, nd, e nd nd
2.80.8PrerequisitOn successfCO 1R arCO 2R stCO 3R diCO 4E coCO 5II alUNIT IE coOhms law - series and p specific resi Electromagic coil.UNIT III Biot–Savart magnetic in magnetic in	0.4teBasicful completionful completionful completionRecall Ohmsndapply knowlotentiometer.Recall Biot–Satraight conductnagnetic materiaRecall basic ofliodes and theirExamine the sonversion amooperation of all tllustrate reductlgebra and k-maCLECTRICITY– Law of resisoparallel – Kirchistance - Potentgnetic induction	of this course, the Course Outcou law, learn ab edge to calib vart's law, exp or, coil and dis als. semiconductor applications. structure of nu ong different n he gates. ction of logical ap. <u>X</u> tance in series i hoff's laws – Wl iometer – Princip	e students will be abl mes oout resistors and brate low voltme olain current passin stinguish various pro- distinguish differen umber systems, per number systems an l expressions using in parallel – Specific heatstone's Bridge – ple – Calibration of v	capacitors ter using ag through operties of at types of rform the ad discuss g Boolean c resistance – Carey Foster	L 3 Domain Cognitive Cognitive Cognitive Cognitive	T 1 Und Ren und an Und a Und A S: capa	SS 0 Level dersta nemb lersta nalyze dersta apply dersta Apply	H 4 and er, nd, e nd nd nd
2.80.8PrerequisitOn successfCO 1R arCO 2R stCO 3R diCO 4E coCO 5II alUNIT IE coOhms law - series and p specific resi Electromagic coil.UNIT III Biot–Savart magnetic in magnetic in	0.4teBasicful completionful completionful completionRecall Ohmsndapply knowlotentiometer.Recall Biot–Satraight conductnagnetic materiaRecall basic ofliodes and theirExamine the sonversion amooperation of all tllustrate reductlgebra and k-maCLECTRICITY– Law of resisoparallel – Kirchistance - Potentgnetic induction	of this course, the Course Outcou law, learn ab edge to calib vart's law, exp or, coil and dis als. semiconductor applications. structure of nu ong different n he gates. ction of logical ap. <u>X</u> tance in series i hoff's laws – Wl iometer – Princip	e students will be abl mes oout resistors and brate low voltme olain current passin stinguish various pro- distinguish differen umber systems, per number systems an l expressions using in parallel – Specific heatstone's Bridge – ple – Calibration of v	capacitors ter using ag through operties of at types of rform the ad discuss g Boolean c resistance – Carey Foster	3 Domain Cognitive Cognitive Cognitive Cognitive	1 Und Ren und an Und a Und A S: capa	0 Level dersta nemb lersta nalyze dersta apply dersta Apply dersta	4 Ind er, nd, e ind nd
Prerequisit On successf CO 1 R ar pCO 2 R st m CO 3 R di CO 4 E cO CO 5 II al UNIT I E Ohms law - series and p specific resi Electromagn coil. UNIT II I Biot–Savart magnetic in magnetic magnetic of wave and I	te Basic ful completion of Recall Ohms ndapply knowl ootentiometer. Recall Biot–Sa traight conduct nagnetic materia Recall basic of fiodes and their Examine the so onversion amo operation of all t Ilustrate reduc Igebra and k-ma CLECTRICITY – Law of resis parallel – Kirch istance - Potent gnetic induction	of this course, the Course Outcou law, learn ab edge to calib vart's law, exp or, coil and dis als. semiconductor applications. structure of nu ong different n he gates. ction of logical ap. <u>X</u> tance in series i hoff's laws – Wl iometer – Princip	e students will be abl mes oout resistors and brate low voltme olain current passin stinguish various pro- distinguish differen umber systems, per number systems an l expressions using in parallel – Specific heatstone's Bridge – ple – Calibration of v	capacitors ter using ag through operties of at types of rform the ad discuss g Boolean c resistance – Carey Foster	Domain Cognitive Cognitive Cognitive Cognitive Cognitive	Und Rer und an Und a Und A S: capa	Level dersta nemb lersta nalyze dersta apply dersta Apply dersta	nd er, nd, e nd nd
CO 1RarpCO 2RcO 3RcO 3RdiCO 3RcO 4CO 5IIalUNIT IElectromagiccoil.UNIT IIBiot-Savartmagnetic inmagnetic inmagnetic inwave and I	ful completion of Recall Ohms ndapply knowl obtentiometer. Recall Biot–Sa traight conduct nagnetic materia Recall basic of fiodes and their Examine the so onversion amo operation of all t Ilustrate reduc Igebra and k-ma CLECTRICITY – Law of resis parallel – Kirch istance - Potent gnetic induction	of this course, the Course Outcou law, learn ab edge to calib vart's law, exp or, coil and dis als. semiconductor applications. structure of nu ong different n he gates. ction of logical ap. <u>X</u> tance in series i hoff's laws – Wl iometer – Princip	e students will be abl mes oout resistors and brate low voltme olain current passin stinguish various pro- distinguish differen umber systems, per number systems an l expressions using in parallel – Specific heatstone's Bridge – ple – Calibration of v	capacitors ter using ag through operties of at types of rform the ad discuss g Boolean c resistance – Carey Foster	Cognitive Cognitive Cognitive Cognitive Cognitive	Und Rer und an Und A Und A S: capa	dersta nemb lersta nalyze dersta apply dersta Apply dersta	nd er, nd, e nd nd
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diCO 4E:CO 5IIalUNIT IE:Ohms law -series and pspecific resiElectromagicoil.IIIUNIT IIIBiot-Savartmagnetic inmagnetic inUNIT IIIProperties owave and I	iodes and their Examine the sonversion amorphism of all terms of a sonversion and k-maximum of the sonversion of a son	applications. structure of nu ong different n he gates. ction of logical ap. <u>X</u> tance in series i hoff's laws – Wl iometer – Princip	imber systems, per number systems an l expressions using in parallel – Specific heatstone's Bridge – ple – Calibration of v	rform the ad discuss g Boolean c resistance - Carey Foster	Cognitive Cognitive - Capacitor	Und A Und A S: capa	apply dersta Apply dersta Apply	.nd
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Ohms law - series and p specific resi Electromagn coil. UNIT II 1 Biot–Savart magnetic in magnetic magnetic mag	– Law of resis parallel – Kirch istance - Potent gnetic induction	tance in series i hoff's laws – Wl iometer – Princip	heatstone's Bridge – ple – Calibration of v	Carey Foster		s: capa	94.1	
magnetic in magnetic ma U NIT III Properties o wave and I	MAGNETISM		No.				9+3	;
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UNIT V	BOOLEAN	ALGEBRA ANI	D KARNAUGH MA	APS			9+3	•
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CO 1		3	2	1	3	1	0	100	PO9 1
	3	3	2 3				0		
CO 2	3			1	3	1		1	1
CO 2 CO 3	3 3	3	3	1 3	3 3	1 1	0 2	1 1	1 1
CO 2 CO 3 CO 4	3 3 3	3 3	3 3	1 3 2	3 3 3	1 1 1 1 1	0 2 1	1 1 1	1 1 1
CO 2 CO 3 CO 4 CO 5	3 3 3 3	3 3 3	3 3 3	1 3 2 2	3 3 3 3	1 1 1 1	0 2 1 1	1 1 1 1	1 1 1 1
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CO 2 CO 3 CO 4 CO 5 TOTAL SCALED VALUE	3 3 3 3 3 15 3	3 3 3 15 3	3 3 3 14 3	1 3 2 2 2 10 2	3 3 3 3 3 15 3	1 1 1 1 1 5 1	0 2 1 1 1	1 1 1 1 1	1 1 1 1 1
CO 1 CO 2 CO 3 CO 4 CO 5 TOTAL SCALED VALUE 0 - No Relation, 1 1-5 \rightarrow 1, 6-10 \rightarrow 2,	3 3 3 3 15 3 - Low Re	3 3 3 15 3 elation, 2-	3 3 3 14 3	1 3 2 2 2 10 2	3 3 3 3 3 15 3	1 1 1 1 1 5 1	0 2 1 1 1 5	1 1 1 1 5	1 1 1 1 1 5

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		A								r 4	H 4		
0.5	1	0.5						0	0	-	-		
Prer	equi	site	Basic k	nowledge of P	hysics.								
On si	ucces	sful compl	etion of	this course, the	students	will be able to:							
			C	ourse Outcome	es		Don	nain		Leve	el		
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CO	2 a	ccuracy.	different	1 2 1			Psycho	Cognitive Psychomotor Psychomotor					
CO.	4	lenoid	netic law	s, explain curr	ent passir	g through coil,	•	•					
CO	4 0	Construct s	simple ci	rcuits using log	ic gates.		0	Cognitive Psychomotor Synth					
CO		Know the ircuits.	conceptu	al difference	between	analog and digita	l Cogr	Cognitive Comp Psychomotor					
Ex. No	T		ts (Any]	Eight Experim	ents)								
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2.				ge – Specific Re		Determination					01		
3.				meter – Tan A.						C	03		
4.		field along	-							C	03		
5.		2.0 Box – S								C	01		
6.			-	DR, NOT) – usi	ng discre	te components				C	05		
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8.				"s verification.	0						02		
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10.				ibtractor using		<u>,</u>					04		
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2. S. Srinivasan, Department of Electrical Engineering, IIT Madras, "Digital Circuits and Systems", National Programme on Technology Enhanced Learning (NPTEL),

				COs vs P	Os				
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	3	3	3	1	2	1	1
CO 2	3	3	3	3	3	1	3	1	1
CO 3	3	3	3	3	3	1	2	1	1
CO 4	3	3	3	3	3	1	3	1	1
CO 5	3	3	3	3	3	1	3	1	1
TOTAL	15	15	15	15	15	5	13	5	5
SCALED	3	3	3	2	3	1	3	1	1
VALUE	5	3	3	3	3	1	3	1	

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

(Course	e Name		Qua	ntitative	Aptitude I			L							
(Course	e Code			XMT				2	0	0	2				
C	Р	Α							L	Т	Р	Н				
2	0	0							2	0	0	2				
Pre	requis	site	Basic r	nathematical ki	nowledge	.										
On	succes	sful comp	letion of	this course, the	students	will be able	e to:									
			(Course Outcon	nes			Don	nain]	Level					
CO	1			c concepts of N solve the proble		H.C.F. &L.	C.M of	Cogn	itive	ve Understandin						
CO	2	-		c concepts of D d to solve the p		ractions,		Cogn	itive	Unde	rstand	ing				
CO	O3 Explain the basic concepts of Square Roots & Cube Roots, Average and to solve the problems									Unde	rstand	ing				
CO	Explain the basic concepts of Problems on Numbers, Problems on Ages and to solve the problemsCognit										nitive Understand					
CO	5	-	the basic he Proble	c concepts of Stems	urds & In	dices, Perce	entage and	Cogn	itive	Understanding						
UN	IT 1									6						
	nbers, IT 2	H.C.F. &	L.C.M of	Numbers.							6					
Dec	cimal H	Fractions, S	Simplific	ation												
UN	IT 3										6					
		ots & Cul	be Roots,	Average.												
	IT 4										6					
		on Numbe	ers, Probl	ems on Ages.							(
	$\frac{\mathbf{IT} 5}{\mathbf{ds} \mathbf{\&} \mathbf{I}}$	ndices, Per	rcentage								6					
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<u>www.jagranjosh.com</u>
 www.bestguru.com

			CO	s vs POs					
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	2	1	3	1	0	1	1
CO 3	3	3	2	1	3	1	0	1	1
CO 4	3	3	2	1	3	1	0	1	1
CO 5	3	3	2	1	3	1	0	1	1
TOTAL	15	15	10	5	15	1	0	5	5
SCALED									
VALUE	3	3	2	1	3	1	0	1	1
0 - No Relation,			Medium F	Relation, 3	- High R	elation			

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

COU	RSE C	ODE	COURSE NAME	L	Т		Р	C
XMT	301		LOGIC AND SETS	2	0		0	2
С	Р	Α		L	Т	Р	SS	E
2	0	0		2	0	0	2	4
PREF	REQUI	SITE: F	oundation course in Mathematics					•
Cours	se outco	omes:		Doma	in	Leve	1	
Staten	nents fo formed	rmula a	DainStatements and Notations, Connectives, ad truth tables-Conditional and biconditional, E- Equivalence of formulae and Normal	Cogni	tive		emberi erstand	-
	us, rule		plain Theory of inference for a statement rence, related problems and Indirect method	Cogni	tive		emberi erstand	U
functi	ons, va	riables a	Explain Predicate Calculus, The statement and quantifiers predicate formulae, free and the universe of discourse.	Cogni	tive		emberi erstand	U
	itation		Explain The rule of sum and product – nation of binomial theorem – Multinomial	Cogni		bering anding		
hole p		e and Th	plain Mathematical Induction, The pigeon e principle of inclusive and exclusive	Cogni	tive		emberi erstand	0
UNIT	'I						6	
			ons- Connectives- Statements formula and tru formed formulae- Equivalence of formulae- No			nditior	al and	
UNIT	II						6	
	•	erence for od of pro	or a statement calculus – rules of inference – report.	elated p	roble	ms –		
UNIT	III						6	
			The statement functions – variables and quantizables – the universe of discourse.	fiers – p	oredic	ate fo	rmulae	e –
UNIT	IV						6	
The ru theore		um and p	roduct – permutation – combination of binom	ial theor	rem –	- Mult	inomia	1
UNIT	V						6	
	ematica gement		on – The pigeon hole principle – The principle	of inclu	usive	and e	xclusiv	/e
			LECTURE				ТОТ	[A]
			30					3

1. R.P. Grimaldi, "Discrete Mathematics and Combinatorial Mathematics", Pearson Education, 1998.

REFERENCES

- 1. P.R. Halmos, Naive "Set Theory", Springer, 1974.
- 2. E. Kamke, "Theory of Sets", Dover Publishers, 1950.
- 3. G. Ramesh and Dr.C. Ganesamoorthy, "Discrete Mathematics", Research gate, Feb, 2018.

TABLE 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2	1	1	1	1	1		1
CO 2	3	2	1	1	1	1	1		1
CO 3	3	2	1	1	1	1	1		1
CO 4	3	2	1	1	1	1	1		1
CO 5	3	2	1	1	1	1	1		1
	15	10	5	5	5	5	5	5	5

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

COURS	E COD	E	COURSE NAME		L	Т	P	C	
XMT30	2		PROGRAMMING IN C		3	1	0	4	
C P	Α								
3 0.5	0.5				L	Τ	Р	H	
					3	1	0	4	
PRERE	QUISI	ГЕ:	Nil						
Course	Outcon	ies:		Domain			Leve	1	
CO1: Ex	xplain (Cons	stants, Variables, Data types, Operator and	Cognitive		Unde	erstai	ıding	
Ex	pressio	ns.							
CO2:Ex	plain Ir	nput	and Output operations, Decision	Cognitive		Unde	erstai	nding	
Μ	aking aı	nd B	ranching, Decision making and Looping.	Psychomoto	r	-	Juide		
<u>CO3. F</u>	znlain (Thor	acter Arrays and Strings and User defined	Cognitive		Unde	espor		
	nctions		acter Arrays and Strings and Oser defined	Cognitive		Unu	51 Sta1	lume	
							Understanding		
								ng	
CO5:Ap	ply Dy	nam	ic memory allocation, Linked lists, Pre-	Cognitive		A	pplyi	ng	
processo	rs and F	Prog	ramming Guide lines.	Affective		Re	eceivi	ing	
UNIT I				I			12		
Introduc	tion to (C – (Constants, Variables, Data types – Operator a	nd Expression	s.				
UNIT II							12		
-		and	Output operations - Decision Making and B	ranching – De	cisio	on ma	king	and	
Looping									
UNIT I							12		
-		ter A	Arrays and Strings – User defined Functions.						
UNIT IV							12		
		nıor	ns – Pointers – File management in C.				T		
UNIT V							12		
-			llocation – Linked lists- Preprocessors – Prog	ramming Guic	le li				
LECT	URE		UTORIAL				DTA	L	
45		15				60			
TEXT B									
1. E	alaguru	isam	y E.,"Programming in ANSI C", Sixth Edition	on, McGraw-H	ill,	2012.			
REFER	ENCE								
1. E	lichkar,	R.S	., "Programming with C", University Press, 2	2012.					

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Scaled Valued Function	15	10	0	5	3	0	5	5	5

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

CO	URSE C	CODE	COURSE NAME		L	Τ	P	C		
XM	IT303		REAL ANALYSIS		4	1	0	5		
С	Р	Α		4 1 L T 4 1			P	Η		
5	0	0			4	1	0	5		
	EREQU		Nil							
Coi	arse Out	comes:								
				Domain			evel			
The Abs nun Unc	solute val nbers on countable	ioms, Fiel lue, Comp a straight e sets.	d properties, Order in R, oleteness, Representation of Real line, Intervals, Countable and plainOpen sets, Closed sets,	Cognitive Cognitive						
Lim	nit points	of a set a	nd Closure of a set.		U	nder	stand	ing		
fune Cor	ctions, T	ypes of di	plainLimits, Continuous scontinuities, Algebra of and Boundedness of continuous	Cognitive			mberi stand	U		
Alg	ebra of d	erivatives	plain Derivability and continuity, , Inverse function theorem for ux's theorem.	Cognitive			mberi stand	U		
proj deri theo	perties of vability prems, th	f integrabl of integral	ain conditions for integrability, e functions, continuity and l functions, Mean value ental theorem of Calculus and eorem.	Cognitive	Remembering Understanding					
UN	IT I R	leal numb	pers		15					
Rep sets	oresentati	onof Real	d properties-Order in R- Absolute numbers on a straight line – Interv hoods and limit points				ntabl	e		
		0	ts –Limit points of a set – Closure of	of a set.	10					
-			-		15					
Lim	nits – Con	ntinuous f	nd Continuity unctions – Types of discontinuities nuous functions.	- Algebra of Con	15 tinuo	us fu	nctio	ns –		
UN	IT IV I	Derivative	es		15					
			bility and continuity- Algebra of de oux's theorem.	rivatives – Invers	se fun	ction	theo	orem		
UN	IT V				15					
pro	perties of	fintegrabl	Definition – Daurboux's theorem – e functions – continuity and deriva fundamental theorem of Calculus and	bility of integral	functi	ions -	– Mea	an		
			LECTURI	E TUTOR	IAL		TO	ГAL		
			6	n	15 101					

TEXT BOOKS

1. M.K.Singhal and Asha Rani Singhal, "A first course in Real Analysis"., R. Chand & Co., June,1997 (Units I to IV).

2. Shanthi Narayan, "A Course of Mathematical Analysis", S.Chand & Co. 1995 (Unit-V).

Unit-I Chapter 1, Sec. 1.1 - 1.10

Unit-II Chapter 2 Sec 2.1 - 2.6

Unit-III Chapter 5 Sec 5.1 - 5.5

Unit – IV Chapter 6 Sec 6.1 – 6.5

Unit - V Chapter 6 Sec 6.2 , 6.3 & 6.5 6.7 6.8, 6.9 of [2]

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
	15	10	0	5	3	0	5	5	5

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

COURSE CODE		DE	COURSE NAME	Ι		Т	Р	С	
XMT304			ANALYTICAL GEOMETRY 3D	4	1	1	0	5	
C	Р	Α		I		Т	Р	Н	
5	0	0		4	1	1	0	5	
PRER	EQUISI	FE: Nil							
Course outcomes:				Domain			Level		
CO1:1	Find coor	dinates in	space, direction cosines of a line, angle	Cog	nitiv	ve	Remem	bering	
	between l	ine and t	p explain angle between planes and				Underst	anding	
	distance o	of a plane	from a point.						
CO2:	Find line	e of inters	section of planes, coplanar lines, skew lines,	Cognitive			Remembering		
	Shortest	distance	between skew lines.						
CO3:1	E xplain s	ection of	sphere by plane-tangent planes, condition	Cog	nitiv	ve	Unders	anding	
of tang	gency and	system of	of spheres generated by two spheres.						
CO4: Explain and to find the equation of surface, cone,				Cognitive			Remembering		
	intersecti	on of stra	hight line and quadric cone, tangent plane				Underst	anding	
	and norm	al.							
CO5:	Explain	the cond	ition for plane to touch the quadric cone,	Cognitive		ve	Understanding		
	condition	that the	cone has three mutually perpendicular						
	generator	s and co	ndition for the plane to touch the conicoid.						
UNIT	Ι							15	
		-	ection cosines of a line in space-angle betwee Angle between planes – Distance of a plane fi			-	ice – eq	uation of	
UNIT	II							15	
skew l UNIT	ines and s III	hortest d	ine of intersection of planes – plane containing istance between skew lines- length of the per	pendio	cula	r fro	om poin	t to line.	
			nere-Section of sphere by plane-tangent plane ted by two spheres - System of spheres gener						
UNIT	IV							15	
The ec norma		surface -	- cone – intersection of straight line and quad	ric co	ne -	- tai	ngent pl	ane and	
	V							15	
UNIT		ane to to	uch the quadric cone - angle between the lin				-		
Condi cone. interse	Condition	h that the	e cone has three mutually perpendicular g l quadric – tangents and tangent planes – co				-		
cone. interse	Condition ection of a	h that the	e cone has three mutually perpendicular g l quadric – tangents and tangent planes – co		n fo	or th	-		

TEXT BOOK

- 1. Shanthi Narayanan and Mittal P.K,"Analytical Solid Geometry" 16th Edition S.Chand & Co., New Delhi,2005.
- Narayanan and Manickavasagam Pillay, T.K.," Treatment as Analytical Geometry" S.Viswanathan (Printers & Publishers) Pvt. Ltd., 2008

Unit I : Chapter I, Sec 1.5 to 1.9, Chapter II Sec 2.1 to 2.3, Pages : 10-31 Chapter II Sec 2.4 to 2.8 pages : 32-47 of [1]

Unit II : Chapter III section 3.1-3.7, pages 55-89 of [1]

Unit III : Chapter VI Sec. 6.1 to 6.6 pages : 121-143 of [1]

- Unit IV : Chapter V Sec.43 to 47 pages : 103-113 of [2]
- Unit V : Chapter V Sec.49 to 53, Pages:115-125 of [2]

REFERENCE

1. P.Duraipandian & others, "Analytical Geometry 3 Dimensional", Edition, 1998.

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
	15	10	0	5	3	0	5	5	5

 $1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$

COU	COURSE CODECOURSE NAMEKMT 305PROGRAMMING IN C (PRACTICAL)			L	Т	Р	C	
XMI			0	0	2	2		
С	Р	Α			L	Т	Р	Η
2	0	0			0	0	2	4
PRE	REQU	ISITE:	Nil					
COU	IRSE O	UTCO	MES:		1		1	
Course Outcomes: Domain						Level		
CO1	: Apply	v Consta	ints, Variables, Data types, Operator and	Cognitive		Understanding		
	Expres	ssions to	o write simple programmes	_				
CO2:Apply Input and Output operations, Decision Cognitive					Understanding			
to write simple programmes Psychomotor				r	Guided			
						Response		
CO3: Apply Character Arrays and Strings and User defined Cognitive					Understandin			
	Funct	ions to	write simple programmes					
CO4:Apply Structures and unions, Pointers and Cognitive					Understandi			
	File n	nanagen	nent in C to write simple programmes			Aj	pplyi	ng
CO5:Apply Dynamic memory allocation, Linked lists, Cognitive					Applying			
Preprocessors and Programming Guide lines to write Affective					Receiving			
	simpl	e progra	ammes					
			List of Programmes					
1. Wı	rite a Pr	ogram (to convert temperature from degree Centigrad	de to Fahrenhei	it.			
2. Wı	rite a Pr	ogram (o find whether given number is Even or Odd	l.				
		-	o find greatest of three numbers.					
			of names in alphabetical order					
			of numbers in ascending order					
		-	to using switch statement to display Monday	•				
		U	to display first Ten Natural Numbers and the					
		-	to find Sum and Multiplication of Two Matri					
		U	to find the maximum number in Array using	pointer.				
		-	to reverse a number using pointer. to solve Quadratic Equation using functions					
		-	to find factorial of a number using Recursio					
		-	to calculate Mean, Variance and SD of N nu					
10. 1	-	Program	to calculate mean, variance and 5D of 10 II					

Course N	lame	DISASTER MANAGEMENT					
Course C	Code	XUM306					
Prerequi	site	NIL	L –T –P –C				
			3 - 0 - 0 - 0				
C : P :	Α		L -T - P- H				
2.64 : 0.2	4 :0.12	2	3 - 0 - 0 - 3				
Course C	Outcon	ne	Domain				
			C or P or A				
CO1		rstandin g the concepts of application of types of er preparedness	C(Application)				
CO2	disast		C(Analyze)				
CO3	globa		C(Analyze)				
CO4		nate Disaster and mitigation problems.	C(Application)				
CO5		knowledge on essentials of risk reduction	C(Application)				
UNIT I		RODUCTION oduction – Disaster preparedness – Goals and obj	9 hrs				
	RE App Info Geo tele com	PLICATION OF TECHNOLOGY IN DISASTER RI DUCTION blication of various technologies: Data bases – RDBM ormation systems – Decision support system and ographic information systems – Intranets and ex- conferencing. Trigger mechanism – Remote sensi tribution of remote sensing and GIS - Case study.	9 hrs IS – Management other systems – stranets – video ing-an insight –				
UNIT III		ARENESS OF RISK REDUCTION	9 hrs				
		gger mechanism – constitution of trigger mechanism – cation – disaster information network – risk reduction by					
UNIT IV	DE	VELOPMENT PLANNING ON DISASTER	9 hrs				
	imp	lication of development planning – Financial arrange rovement – Disaster preparedness – Community nagement– Emergency response.					
UNIT V	SEI	SMICITY	9 hrs				
	of an earthquake, arthquakes						
ТЕУТ РА		45 hrs Total-45 hrs					
Рс	ddhart olicies'	ha Gautam and K Leelakrisha Rao, "Disaster Manager" , Vista International Pub House, 2012	-				
2 At		mar, "Global Disaster Management", SBS Publishers, 20	500				
			tributors 2008				
 Encyclopaedia Of Disaster Management, Neha Publishers & Distributors, 2008 Pardeep Sahni, Madhavi malalgoda and ariyabandu, "Disaster risk reduction in sout 							

asia", PHI, 2002

- 3. Amita sinvhal, "Understanding earthquake disasters" TMH, 2010.
- **4.** Pardeep Sahni, Alka Dhameja and Uma medury, "Disaster mitigation: Experiences and reflections", PHI, 2000

Table 1: Mapping of COs with Pos

	PO 1	PO 2	PO 3	P O4	PO 5	P 06	Р О7	PO 8	PO 9	PO 10	PO 11	PO1 2	PSO 1	PSO2
CO1	1					5	2							
CO2	2					1	2					1		
CO3	1					2	2	1				2		
CO4	1					2	2	1				1		
CO5						5	2	3				1		
	5					15	10	5				5		

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

IV SEMESTER

COU COD			COURSE NAME	L	Т		Р	C
XMT	401		THEORY OF EQUATIONS	2	0		0	2
С	Р	Α		L	Т	Р	SS	H
2	0	0		2	0	0	2	4
PRE	REQU	ISITE:	Foundation Course in Mathematics					
Cour	se outo	comes:		Doma	in	Leve	el	
	_	-	hical representation of a polynomials, mum values of a polynomials.	Cogni	tive	Rem Appl	ember ying	ing
signs	positiv	e and n	ral properties of equations, Descarte's rule of egative rule to find the Relation between the cients of equations.	Cogni	tive	Rem Appl	ember ying	ing
			xplain Sets, subsets, Set operations, the laws enn diagrams. Examples of finite and infinite	Cogni	tive	Rem Appl	ember ying	ing
count	ing pri	nciple.	Explain with Examples Finite sets and Empty set, properties of empty set. Standard ses of sets. Power set of a set.	Cogni	tive	Unde Appl	erstand ying	ling
algeb		utions	ocal and binomial equations, and to find of the cubic and biquadratic with Properties ions.	Cogni	tive	Unde	erstand	ling
UNI	ГΙ						6	
			of polynomials, Graphical representation of a paper of a polynomials.	polynon	nials,	maxi	mum a	and
UNI	ΓII						6	
			of equations, Descarte's rule of signs positive a ne roots and the coefficients of equations.	and neg	ative	rule,		
UNI	Г ІІІ						6	
	subsets	· · · · · · · · ·	perations, the laws of set theory and Venn diag	grams. E	lxamj	ples of	f finite	•
UNIT	ΓIV						6	
			ting principle. Empty set, properties of empty of sets. Power set of a set.	set. Sta	ndaro	l set		
UNIT	ΓV						6	
		-	cal and binomial equations. Algebraic solution ies of the derived functions.	ns of the	e cubi	ic and		
			LECI	URE			тот	AL

30 30

TEXTBOOKS

1 W.S. Burnside and A.W. Panton, "The Theory of Equations", Dublin University Press, 1954.

2. C. C. MacDuffee, "Theory of Equations", John Wiley & Sons Inc., 1954.

TABLE 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2	1	1	1	1	1		1
CO 2	3	2	1	1	1	1	1		1
CO 3	3	2	1	1	1	1	1		1
CO 4	3	2	1	1	1	1	1		1
CO 5	3	2	1	1	1	1	1		1
	15	10	5	5	5	5	5	5	5

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

CO	URS DE	SE .	COURSE NAME	L	Т	Р	С
XM		2	INTRODUCTION TO MATLAB	3	1	0	4
C	Р	Α		L	Т	Р	H
4	0	0		3	1	0	4
PRF	ERE	QUI	SITE: Nil				
Cou	rse	Outc	omes:	Dom	ain	Leve	l
			Variables, assignment, statements, expressions, coding, vectors and matrices.	Cogn	itive	Apply	ying
	ors,	dime	in aboutcreating row vectors and column nsions in using functions with vectors and	Cogn	itive	Unde Apply	rstanding ying
inpu	t an		Aatlab Scripts, Input and Output, scripts with put, user defined functions in simple	Cogn	itive	Apply	ying
expr	essi	ons,S	Selection Statement, relational WITCH statement, menu function, looping, sted FOR loop, WHILE loop.	Cogn	itive	Apply	ying
oper	atio	ns on	String manipulations, creating string variable, strings, fundamentals of arrays, structure and s with simple applications.	Cogn	itive	Apply	ying
UNI	ΤΙ					12	
			o MATLAB – Variables and assignment stateme	ents –exp	pressio	ns –	
			d encoding – vectors and matrices.				
UNI						12	
			vectors and column vectors – matrix variables – and matrices.	dimensi	ons in	using fu	inctions
UN	ΠΙ	II				12	
			ogrammes – Matlab Scripts, Input and Output, so to file input and output – user defined functions -				utput,
UN	ТГ	V				12	
			ement – relational expressions, SWITCH statem	nent, mer	u func	tion, lo	oping
	OP		nested FOR loop, WHILE loop.			T	
– F		r				12	
- F UNI	T V			· · ·	ndame	ntals of	2
– F UNI Strin	TV ng m	anipu	ulations, creating string variable, operations on su ure and file operations- simple applications or	0			
– F UNI Strin	TV ng m	anipu	ure and file operations- simple applications or	0	ve.		TOTAL
– F UNI Strir	TV ng m	anipu	ure and file operations- simple applications or	n the abo	ve.		TOTAL 60

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
	15	10	0	5	3	0	5	5	5

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

COU	URSE (CODE	COURSE NAME		L	Τ	P	C	
XM	T403		VECTOR CALCULUS & FO	URIER SERIES	4	1	0	5	
С	Р	Α			L	Τ	P	Η	
5	0	0			4	1	0	5	
PRE	EREQU	ISITE:	Differential Calculus and Integr	al Calculus					
Cou	rse Ou	tcomes:		Domain		Le	evel		
C01	l:Find(Gradient of	of a vector, Directional derivative,	Cognitive	R	emen	nberi	ng	
	diver	gence &	curl of a vector, solenoidal &			App	lying		
irrig	ational	vector fu	nctions, Laplacian double	Psychomotor			ided		
	oper	ator and	to solve simple problems.			Resp	onse	;	
CO2	2: Find	vector in	ntegration, tangential line integral,	Cognitive	R	emen	nberi	ng	
cons	ervative	e force fi	eld, scalar potential, work			App	lying		
done	•		mal surface integral,						
		-	ral and to solve simple problems.						
CO 3	O3:Use Gauss Divergence Theorem, Stoke's Cognitive						nberi	ng	
	Theorem, green's Theorem and to solve Simple problems & Verification of the						lying		
			simple problems.						
CO4			ier Series expansion of periodic	Cognitive	Understanding				
	_		Period 2π Make Use of odd	6	Applying				
			ons in Fourier Series.			ГГ	5 0		
COS	5: Expl	l ain Half	-range Fourier cosine Series &	Cognitive	U	nders	tandi	ng	
			hange of interval & Combination	Affective		Rece	iving		
		eries.							
UNI					15				
			n –velocity & acceleration-Vector						
			ve – divergence & curl of a vector erator –simple problems.	or solenoidal & irr	otatio	onal	vecto	rs –	
-	TII		simple problems.		15				
		ration	Fangential line integral –Conservation	ive force field scal		tonti	പ		
			e - Normal surface integral-Volum						
	T III				15				
		rgence T	heorem – Stoke's Theorem- Green'	s Theorem – Simpl		blem	s &		
			eorems for simple problems.	F-					
UNI	TIV				15				
Four	rier serie	es- defini	tion - Fourier Series expansion of p	periodic functions w	/ith p	oerioc	Ι 2π	_	
			unctions in Fourier Series.						
UNI	ΤV				15				
			eries – definition- Development in Combination of series.	Cosine series & in	Sine	serie	S -		
			LECTURE	TUTORIAL			тот	AL	

TEXT BOOKS

1.M.L. Khanna, "Vector Calculus", Jai Prakash Nath and Co., 8th Edition, 1986.

2. S. Narayanan, T.K. Manicavachagam Pillai, "Calculus", Vol. III, S. Viswanathan Pvt Limited and Vijay Nicole Imprints Pvt Ltd, 2004.

UNIT – I - Chapter 1 Section 1 & Chapter 2 Sections 2.3 to 2.6, 3, 4, 5, 7 of [1]

UNIT - II - Chapter 3 Sections 1, 2, 4 of [1]

UNIT – III - Chapter 3 Sections 5 & 6 of [2]

UNIT – IV - Chapter 6 Section 1, 2, 3 of [2]

UNIT – V - Chapter 6 Section 4, 5.1, 5.2, 6, 7 of [2]

REFERENCES

1. P.Duraipandiyan and Lakshmi Duraipandian, "Vector Analysis", Emarald publishers 1986.

2. Dr. S.Arumugam and prof. A.Thangapandi Issac, "Fourier series", New Gamma publishing House 2012.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Scaled Value	15	10	0	5	3	0	5	5	5
Total	3	2	0	1	1	0	1	1	1

Table 1: COs VS POs Mapping

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

	SE CO	DE	COURSE NAME	L	Т	Р	С
XMT4)4		ALGEBRA	4	1	0	5
С	Р	Α		L	Т	Р	Н
5	0	0		4	1	0	5
PRERI	EQUISI	TE: Nil					
Course	outcom	es:		Doi	nain	Le	vel
example	es and	. .	elian and non-abelian groups with plain integer under addition and n.	Ũ	nitive omotor	Gui	nbering i ded oonse
group C triangle	x roots 3Ln (n,R , (ii) an quare, th	of unity), grou equilat	c groups from number systems, y, circle group, the general linear ps of symmetries of (i) an isosceles teral triangle, (iii) a rectangle, and nutation group Sym (n), Group of	Cog	nitive	Unders	tanding
a subgi subgrou	roup gei	nerated oup, exa	s, cyclic subgroups, the concept of by a subset and the commutator mples of subgroups including the	Cog	nitive	Unders	tanding
Lagrang	ge's the		ain Cosets, Index of subgroup, order of an element, Normal ups.	Cog	nitive	Remen Unders	nbering tanding
commu the ring	tative of integ	rings with ers modu	ain rings, commutative and non- th rings from number systems, Zn alo n, rings of matrices, polynomial mous functions.	C	nitive ective	Unders	nbering tanding iving
UNIT I	[15
Zn of in	itegers u		of groups, examples of abelian and a ition modulo n and the group U(n) of				
modulo	-						15
modulo UNIT I	1						
UNIT I Cyclic g group C	groups fr JLn (n,R), groups	ber systems, complex roots of unity, of symmetries of (i) an isosceles tria a square, the permutation group Syn	angle, (i	i) an equ	uilateral t	riangle,
UNIT I Cyclic g group C	groups fr iLn (n,R ectangle,), groups	of symmetries of (i) an isosceles tria	angle, (i	i) an equ	uilateral t	riangle,
UNIT I Cyclic g group C (iii) a re UNIT Subgrou	groups fr GLn (n,R ectangle, III ups, cycl), groups and (iv) ic subgro	of symmetries of (i) an isosceles tria	angle, (i n (n), G prated by	i) an equ roup of c	uilateral t quaternion	riangle, ns.
UNIT I Cyclic g group C (iii) a re UNIT Subgrou	groups fr GLn (n,R ectangle, III ups, cycl tator sub), groups and (iv) ic subgro	of symmetries of (i) an isosceles tria a square, the permutation group Syn pups, the concept of a subgroup gene	angle, (i n (n), G prated by	i) an equ roup of c	uilateral t quaternion	riangle, ns.
Cyclic g group C (iii) a re UNIT Subgrou commu UNIT I Cosets,	groups fr GLn (n,R ectangle, III ups, cycl tator sub V Index of), groups and (iv) ic subgro group of f subgrou	of symmetries of (i) an isosceles tria a square, the permutation group Syn pups, the concept of a subgroup gene	angle, (i n (n), G prated by ding the element,	i) an equ roup of c / a subse e center c	uilateral t quaternion at and the of a group	riangle, ns. 15

Definition and examples of rings, examples of commutative and non-commutative rings: rings from number systems, Zn the ring of integers modulo n, ring of real quaternions, rings of matrices, polynomial rings, and rings of continuous functions. Subrings and ideals, Integral domains and fields, examples of fields: Zp, Q, R, and C. Field of rational functions.

LECTURE	TUTORIAL	TOTAL
60	15	75

TEXT BOOKS

1. S. Narayanan& T. K. ManickavasagamPillai, "Algebra", Vol. 1, S. Viswanathan Pvt. Ltd.,

Chennai, 2004.

2. S. Narayanan& T. K. ManickavasagamPillai, "Algebra", Vol. 2, S. Viswanathan Pvt. Ltd.

Chennai, 2004.

- 3. Joseph A Gallian, "Contemporary Abstract Algebra", 4th Ed., Narosa, 1999.
 - 4. George E Andrews, "Number Theory", Hindustan Publishing Corporation, 1984.

REFERENCES

- 1. John B. Fraleigh, "A First Course in Abstract Algebra", 7th Ed., Pearson, 2002.
- 2. M. Artin, "Abstract Algebra", 2nd Ed., Pearson, 2011.

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Scaled Value	15	10	0	5	3	0	5	5	5
Total	3	2	0	1	1	0	1	1	1

 $1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$

CO	URSE C	CODE	COURSE NAME	L	Т	Р	С
XM	Т 405		INTRODUCTION TO MATLAB PRACTICAL	0	0	2	2
С	Р	Α		L	Т	Р	Н
2	0	0		0	0	2	4
PRE	EREQU	ISITE:	Nil				
Cou	rse Outc	ome		Do	main	Le	vel
expr			bles, assignment, statements, cters, encoding, vectors and	Cognitive Applying			lying
vect	_		utcreating row vectors and column in using functions with vectors and	Cognitive		Understanding Applying	
with		nd outp	Scripts, Input and Output, scripts ut, user defined functions in	Cog	nitive	Applying	
CO4: Apply Selection Statement, relational expressions, SWITCH statement, menu function, looping, FOR loop, nested FOR loop, WHILE loop.					nitive	Applying	
CO5: Apply String manipulations, creating string variable, operations on strings, fundamentals of arrays, structure and file operations with simple applications.					nitive	Арр	lying

Assessment Plan for Formative Assessment:

(CIA -1) LabExperiment: No. of Experiments: 15 (30 marks)

1: Aim & Apparatus Required (understanding) (10 marks)

2. Procedure / Programme (applying) (30 marks)

3. Output (Applying) (10 marks)

(CIA Lab 2) (30 marks)

1. Aim & Apparatus Required (10%) Cog (U) CO1, CO2 & CO3 (10 marks)

2. Procedure & programme(30%) Cog (Ap) CO1, CO2 & CO3 (30 marks)

3. Output (10%) Cog (Ap) (10 marks)

(CIA -3) Project FA-(10marks)

1.Aim & Apparatus Required (10%) Cog (U) Psy(3) Aff(1)CO4 (10 marks)

2. Procedure & programme(30%) Cog (Ap) Psy(4) Aff(2)CO4 (30 marks)

3. Output (10%) Cog (Ap) (10 marks)

rando distril CO2:Defin moment ger CO3:Defin Poisso CO4: Defin its pro condi CO5: Defin variables, co variab UNIT I Sample spac distribution UNIT II Mathematic UNIT II Discrete dis UNIT IV Joint cumul and conditio		ODE	COURSE NAME	L	Т		Р	C
	501		Probability and Statistics	2	0		0	2
С	Р	Α		L	Т	Р	SS	H
2	0	0		2	0	0	2	4
	-		lgebra					
Cour	rse outc	omes:		Doma	in	Leve	el	
CO1	:Define	and Exp	blain Sample space, probability axioms, real	Cogni	tive	Rem	emberi	ng
			es (discrete and continuous), cumulative			Unde	erstand	ing
	distrib	ution fun	ction, and probability mass/density functions.					
CO ₂	:Define	and Exp	blain Mathematical expectation, moments,	Cogni	tive	Rem	emberi	ng
	-		nction, characteristic function.				erstand	0
$C\overline{O3}$		-	lain Discrete distributions: uniform, binomial,	Cogni	tive		emberi	-
			uous distributions: uniform, normal, exponential.			Unde	erstand	ing
CO4		-	plain Joint cumulative distribution function and	Cogni	tive	Rem	emberi	ng
			bint probability density functions, marginal and			Unde	erstand	ing
			ributions.	C - ·	4	D -		
		-	plain Expectation of function of two random	Cogni	uve		emberi	U
varia			expectations, and independent random			Unde	erstand	mg
TINIT		les.					6	
		e much ch	ility opiones used an dom youightes (discusts and as					
-	-	-	ility axioms, real random variables (discrete and co and probability mass/density functions.	Jitiliuot	is), ci	imuia	uve	
UNI	ΓII						6	
		l expecta	tion, moments, moment generating function, chara	cteristic	func	tion.	6	
Math	ematica	l expecta	tion, moments, moment generating function, chara	cteristic	func	tion.	6	
Math UNI	ematica Г III		tion, moments, moment generating function, chara				6	
Math UNI Discr	ematica Γ III rete distr						6	
Math UNI Discr UNI	ematica Γ III rete distr Γ IV cumula	ributions: tive distri	binomial, Poisson, continuous distributions: unifo	orm, nor	mal, e	expon	6 ential.	- - - -
Math UNIT Discr UNIT Joint and c	ematica F III rete distr F IV cumula condition	ributions: tive distri	binomial, Poisson, continuous distributions: unifo	orm, nor	mal, e	expon	6 ential. 6 margi	nal
Math UNI Discr UNI Joint and c UNI	ematica F III rete distr F IV cumula condition F V	ributions: tive distri nal distrib	binomial, Poisson, continuous distributions: unifo ibution function and its properties, joint probability putions.	orm, norm	mal, e	expon ctions,	6 ential. 6 margin	nal
Math UNIT Discr UNIT Joint and c UNIT Expe	ematica F III rete distr F IV cumula condition F V ctation of	ributions: tive distri nal distrib	binomial, Poisson, continuous distributions: unifo	orm, norm	mal, e	expon ctions,	6 ential. 6 margin	nal
Math UNIT Discr UNIT Joint and c UNIT Expe	ematica F III rete distr F IV cumula condition F V ctation of	ributions: tive distri nal distrib	binomial, Poisson, continuous distributions: unifo ibution function and its properties, joint probability putions.	orm, norm	mal, o / func	expon ctions, ent ran	6 ential. 6 margin	nal
Math UNIT Discr UNIT Joint and c UNIT Expe	ematica F III rete distr F IV cumula condition F V ctation of	ributions: tive distri nal distrib	binomial, Poisson, continuous distributions: unifo ibution function and its properties, joint probability putions.	orm, norm density	mal, o 7 func pende TUR	expon ctions, ent ran	6 ential. 6 margi 6 dom	nal
Math UNIT Discr UNIT Joint and c UNIT Expe- varial	ematica F III rete distr F IV cumula condition F V ctation of	ributions: tive distributional distribution	binomial, Poisson, continuous distributions: unifo ibution function and its properties, joint probability putions.	orm, norm density	mal, o 7 func pende TUR	expon ctions, ent ran E	6 ential. 6 margi 6 dom	nal
Math UNIT Discr UNIT Joint and c UNIT Expe- varial Varial	ematica F III rete distri- F IV cumula condition F V ctation of bles. TBOO	ributions: tive distribution f function f function K Gupta and	binomial, Poisson, continuous distributions: unifo ibution function and its properties, joint probability putions.	orm, norm density ns, indep LEC	mal, o y func pende TUR	expon etions, ent ran E 30	ential. ential. margi 6 dom TOT	nal
Math UNIT Discr UNIT Joint and c UNIT Expe- varial TEX 1.	ematica F III rete distri- F IV cumula condition F V ctation of bles. TBOO	ributions: tive distribution f function of function K Supta and n Chand a	binomial, Poisson, continuous distributions: unifo ibution function and its properties, joint probability putions. on of two random variables, conditional expectation by the second sec	orm, norm density ns, indep LEC	mal, o y func pende TUR	expon etions, ent ran E 30	ential. ential. margi 6 dom TOT	nal
Math UNIT Discr UNIT Joint and c UNIT Exped varial TEX 1. REF	ematica F III rete distri- F IV cumula condition F V ctation of bles. TBOO . S.C.C Sulta ERENC . Irwin	ributions: tive distributions function of function K Gupta and n Chand a CES Miller an	binomial, Poisson, continuous distributions: unifo ibution function and its properties, joint probability putions. on of two random variables, conditional expectation by the second sec	orm, norm density ns, indep LEC s", tenth	mal, o 7 func Dende TUR 3 n revi	expon etions, ent ran E 30 sed ed	ential. 6 ential. 6 margi 6 dom TOT	nal

TABLE 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2	1	1	1	1	1		1
CO 2	3	2	1	1	1	1	1		1
CO 3	3	2	1	1	1	1	1		1
CO 4	3	2	1	1	1	1	1		1
CO 5	3	2	1	1	1	1	1		1
Scaled Value	15	10	5	5	5	5	5	0	5
Total	3	2	1	1	1	1	1	0	1

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

			ODE		COURSE NAME			L	Т	P	C
XM	[T50]	2B			Discrete Mathematics			4	2	0	6
С	P	Α						L	Т	Р	Η
6	0	0						4	2	0	6
PR	ERE	QUI	SITE:	:L	ogic and Sets						
Coι	ırse	Outo	omes	:			Dom	ain		Leve	l
CO				-	ply truth tables and the rules of propositiona	ıl	Cogni	tive	Ren	nembe	ering
	a	nd p	redicat	te	calculus.				A	pplyi	ng
CO	р		by coi		wing methods direct proof, indirect proof, a adiction, and case analysis to formulate show		Cogni	ognitive A _l			ng
CO	h	omo	geneo	us	urrence relation with constant coefficients, r recurrence relations and non homogeneous ations using methods of generating functions		Cogni	tive	A	pplyi	ng
CO	4: E	xpla	in Bas	sic	theorems on Boolean Algebra, Duality lean functions.		Cogni	tive	Und	erstar	Iding
CO	с				algebra, Logic gates and circuits circuits, Boolean expression and karnaugh		Cogni	tive	A	pplyi	ng
UN	IT I					I				18	
					Propositional calculus- Basic Logical operat			onal	staten	ents-	Bi
			ateme	ent	- tautologies- contradictions- equivalence in	nplicat	tions.				
	IT II									18	
					of inference for the statement calculus- The calculus.	e pred	icate c	alcul	us inf	erenc	e
UN	IT I	II								18	
rela	tion	with	consta	an	and generating functions- recurrence relation coefficients- Non homogeneous recurrence nce relations- Methods of generating function	relati					ce
UN	IT I	V								18	
Bas	ic the	eorer	ns on]	Bo	olean Algebra- Duality principle Boolean fu	unctio	ns.			1	
	IT V									18	
Boo	olean	func			pplications of Boolean algebra- Logic gates ression – karnaugh map.	and c	ircuits	-con	nbinat		
				_	LECTURE	, ,	ГИТО	RIA	L	TO	TAI
					60			3	30		9(
RE	(2 FER	.B.Ti Comp 007. ENC	rembla outer S E	Sci	R. Manohar, "Discrete Mathematical struct ence", Tata McGraw Hill, International editi	ion Ne	ew Del	hi, 1	997, F	Reprin	
1.1	VI.K.	ven	katran	па	n, N.Sridharan & N.Chandrasekaran, "Discr	ele Ma	autema	aucs	, i ne	INATI	unal

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
	15	10	0	5	3	0	5	5	5

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

COU	RSE CO	ODE	COURSE NAME		L	Т	Р	С	
XMT	C503A		Numerical Methods		4	2	0	6	
С	Р	Α			L	Т	Р	H	
6	0	0			4	2	0	6	
PRE	REQUI	SITE:	Differential Calculus and Integral	Calculus				1	
Cour	se Outc	omes:		Domain		L	evel		
CO1:	:Explair	n and S	olve Algorithms, Convergence,	Cognitive	R	emer	nberi	ng	
			nod, False position method, Fixed method, Newton's method.		Applying				
CO2	: Solve	system	of linear equations using iterative	Cognitive	R	emer	nberi	ng	
		ls Gauss e metho	-Jacobi, Gauss-Seidel and SOR ods.			Арр	lying		
CO3:	-	0	nge and Newton interpolation: linear er, finite difference operators.	Cognitive	R		nberi lying	U	
CO4:	•		difference, backward difference and nce to find Numerical differentiation:	Cognitive	U		standi lying	U	
CO5	: Solve I	ntegrati	on using trapezoidal rule, Simpson's	Cognitive	U	nders	standi	ng	
	rule, an	d Euler	's method.						
UNI	ГΙ							18	
-	rithms, (od, New	-	ence, Bisection method, False position ethod.	n method, Fixed	point	t itera	tion		
UNI	ГП							18	
Secar	nt metho	d, LU d	ecomposition, Gauss-Jacobi, Gauss-Se	eidel and SOR it	erativ	ve me	ethod	s.	
UNI	ГШ							18	
Lagra	inge and	Newto	n interpolation: linear and higher order	r, finite differenc	e op	erato	rs.		
UNIT	F TX 7				_			18	
		fforantic	tion: forward difference, backward dif	fference and cen	tral T	liffor	onco		
UNIT								18	
		anozoid	lal rula, Simpson's rula, Euler's metho	d				10	
meg	i auvii. li	apezoio	al rule, Simpson's rule, Euler's metho	TUTORIAL			TO	ГАТ	
							10.		
		20	60	30				90	
1.B. H 20	007.	'A Frien	dly Introduction to Numerical Analys				dia,		
			Iyengar and R.K. Jain, "Numerical Menutation", 5th Ed., New age Internation				7.		

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
	15	10	0	5	3	0	5	5	5

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

COUR	SE COI	DE	COURSE NAME		L	Т	P	C		
XMT5	04A		Linear Algebra		4	2	0	6		
С	Р	Α			L	Т	Р	Н		
6	0	0			4	2	0	6		
PRER	EQUISI	ГE:Matr	ices							
COUR	SE OUT	COMES	ð:]	Doma	in	Le	vel		
CO1:E		-	n vector spaces, subspaces, linear nd span of a set with examples.	C	Cognit			emembering nderstanding		
	Define L to find Ra		ependence, Basis and Dimension and Jullity.	1 C	Cognit	ive	Remen	nbering		
CO3:E	xplain n	natrix of a	a linear transformation ,Inner produc	t C	Cognit	ive	Remen	nbering		
	•	orthogon	e with examplesorthogonality, Gran alisation process and orthogonal	ı			Unders	tanding		
		-	Matrices, Types of Matrices and to f a matrix and Rank of a matrix.	C	Cognit	ive	Remen	nbering		
CO5:	Explain	Characte	ristic equation and Cayley -Hamilton	ı C	Cognit	ive	Remen	nbering		
ł	theorem a	and to fin	d Eigen values and Eigen vectors.				Unders	tanding		
UNIT	I Vecto	or Spaces						18		
Vector	spaces –	Definitio	on and examples – Subspaces-linear t	ransfo	ormati	ion – S	Span of	a set.		
UNIT	II Basis a	and Dim	ension					18		
Linear	Independ	lence – B	asis and Dimension –Rank and Nulli	ty.				1		
UNIT	III : M	atrix and	l Inner Product Space					18		
			rmation -Inner product space – Defir hmidt orthogonalisation process – O			-		I		
UNIT	IV : Th	eory of N	Aatrices					18		
<u> </u>		•	pes of Matrices – The Inverse of a M of a matrix.	atrix	– Eleı	nenta	ry			
UNIT	V: Chara	acteristic	equation and Bilinear forms					18		
Charac	teristic ea	quation a	nd Cayley -Hamilton theorem – Eige	n valı	ues an	d Eig	en vect	ors		
			LECTURE	TU	TORI	AL	r	ΓΟΤΑΙ		
			60			30		9(

Unit1: Chapter 5, Sec 5.1 to 5.4

Unit2: Chapter 5, Sec 5.5 to 5.7

Unit3: Chapter 5, Sec 5.8, Chapter 6, Sec 6.1 to 6.3

Unit4: Chapter 7 Sec 7.1 to 7.5

Unit5: Chapter 7, Sec 7.7, 7.8

REFERENCE

1. I. N. Herstein, "Topics in Algebra", Second Edition, John Wiley & Sons (Asia), 1975.

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Scaled Value	15	10		5	3		5	5	5
Total	3	2		1	1		1	1	1

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

VI SEMESTER

COU	RSE CO)DE	COURSE NAME		L	Т		Р	С
XMT	501		Graph Theory		2	0		0	2
С	Р	Α			L	Т	Р	SS	Н
2	0	0			2	0	0	2	4
PRER	EQUIS	ITE: M	atrices				•		
Cours	e outco	mes:		D	omai	n	L	evel	
Graph	s and su	bgraphs	ain The Konigsberg Bridge Problem, , Degrees, Subgraphs , Isomorphism. , overings.	Cognitive Rememberi Applying				U	
Walks		and Path	plain Matrices, Operations on Graphs, as, Connectedness and Components and	Co	Cognitive Rememberi Applying				U
			lain Hamiltonian Graphs, ees and Centre of a Tree.	Co	gnitiv	ve F	Rememberin Applying		
			plain Planarity, Properties and anar Graphs.	Co	gnitiv	ve l		rstand plying	U
Proper	ties,Son	ne Appl	plain Directed Graphs, Basic ications, Connector Problem, Kruskal's ath Problem and Dijkstra's algorithm.	Co	ognitiv	itive Understar		rstand	ing

UNIT I		6
Introduction - The Konigsberg Bridge Problem - Graph Examples - Degrees - Subgraphs – Isomorphism. –inde	U I	nd
UNIT II		6
Matrices - Operations on Graphs - Walks, Trails and Pa - Eulerian Graphs.	aths – Connectedness and Cor	nponents
UNIT III		6
Hamiltonian Graphs (Omit Chavatal Theorem) - Chara	cterization of Trees - Centre of	of a Tree.
UNIT IV		6
Planarity: Introduction - Definition and Properties - Ch	aracterization of Planar Graph	18.
UNIT V:		6
Directed Graphs: Introduction - Definitions and Basic Connector Problem - Kruskal's algorithm - Shortest Pa		
LECTURE		TOTAL
30		30
ТЕХТ ВООК		

 S. Arumugam and S. Ramachandran, "Invitation to Graph Theory", SciTech Publications (India) Pvt. Ltd., Chennai, 2006.
 Unit-I Chapter-1 Sec 1.0, 1.1 and Chapter -2 Sec 2.0, 2.1, 2.2, 2.3, 2.4.2.6
 Unit-II Chapter-2 Sec 2.8,2.9 ,Chapter-4 Sec 4.1,4.2 and Chapter-5 Sec 5.0,,5.1
 Unit-III Chapter-5 Sec 5.2, Chapter-6 Sec 6.0, 6.1, 6.2.
 Unit-IV Chapter-8 Sec 8.0, 8.1, 8.2.
 Unit-V Chapter-10 Sec 10.0, 10.1 Chapter-11 Sec 11.0, 11.1, 11.2

REFERENCES

1. Narsingh Deo, "Graph Theory with applications to Engineering and Computer Science", Prentice Hall of India, 2004.

2. Gary Chartrand and Ping Zhang, "Introduction to Graph Theory", Tata McGraw-Hill Edition, 2004.

Table 1: CO Vs PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Scaled Value	15	10	0	5	3	0	5	5	5
Total	3	2		1	1		1	1	1

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

COD	RSE E		COURSE NAME		L	Т	Р	C			
XMT	C602A		Complex Analysis		4	2	0	6			
С	Р	Α			L	Т	Р	Н			
6	0	0			4	2	0	6			
PRE	REQU	ISITE	Differential Calculus and Integral Calculus								
Cour	se out	comes		Doi	nain		Le	vel			
find a	analytic	e funct	ations in cartesian and polar co-ordinates to on and to Explain Harmonic function lications.	Cog	nitive	Uı	Understanding Applying				
transf	_	ons an	onformal mappings - Linear and Non-linear d to Apply cross ratio to constructBilinear	Cog	nitive	Uı	Understanding Applying				
cauch	ny's int mum	tegral	integral using cauchy's integral theorem, formula and to Explain Liouville's theorem, as theorem and to apply them in simple	Cog	nitive	Uı	nders Appl	tanding ying			
			ors series and laurent's seriesExpansion of er series and to explain types of singularities.	Cog	nitive		Appl	ying			
		-	chy residue theorem to Solve Integration of pe involving cosx, sinx.	Cog	nitive		Appl	ying			
UNI	ΓΙ:Α	nalytic	Functions					18			
-			- Cauchy Riemann Equation in Cartesian and p and applications.	olar	co-ore	linate	es - H	armonic			
UNI	Г II : (Confor	mal Mappings and Transformations					18			
			gs - Linear and Non-linear transformations – Bi Properties and applications	ilinea	r						
UNI	Г III :	Comp	lex Integration					18			
		in the	Complex plane - Cauchy's Integral theorem -		-			ormula -			
Integ		heorei	n - Maximum modulus theorem - Applications a	and si	mple	probl	ems.				
Integ Liouv	ville's t		n - Maximum modulus theorem - Applications a ex Differentiation	and si	mple	probl	CIIIS.	18			
Integr Liouv UNIT	ville's t F IV : or's and	Comp d Laur	**	eries	- Sing						
Integr Liouv UNIT Taylc of sin	ville's t FIV: or's and igularit	Comp l Laur ies - P	ex Differentiation ent's series - Expansion of functions in power se	eries	- Sing			- Types			
Integ Liouv UNIT Taylo of sin UNIT	ville's f FIV: or's and gularit FV: C ilus of	Comp l Laur ies - P alculu Resid	ex Differentiation ent's series - Expansion of functions in power se roperties of singularities - Identification of singu	eries 11ariti	- Sing	ular p	ooints	- Types			
Integ Liouv UNIT Taylo of sin UNIT	ville's f FIV: or's and gularit FV: C ilus of	Comp l Laur ies - P alculu Resid	ex Differentiation ent's series - Expansion of functions in power seroperties of singularities - Identification of singu s of Residues ues: Residue theorem - Integration of function and problems relating to residues.	eries ılariti ıs of	- Sing	ular p pe in	points volvi	18			

1. S. Narayanan & T.K. ManickavasagamPillai, "Complex Analysis", S. Viswanathan Publishers, Chennai, 1997.

Unit 1: Chapter 1 Unit 2: Chapter 2 Unit 3: Chapter 3 Unit 4: Chapter 4 Unit 5: Chapter 5

REFERENCES

- 1. S. Arumugam, A. Thangapandi Isaac& A. Somasundaram, "Complex Analysis", SciTech Publications, India, Pvt. Ltd., 2004.
- 2. S. Ponnusamy, "Foundations of Complex Analysis", 2ndEdition, Narosa Publication, New Delhi, 2005.
- 3. R. V. Churchill & J.W.Brown, "Complex variables and applications", 5thEdition, McGraw Hill, Singapore, 1990.

Table 1: CO Vs PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Scaled Value	15	10	0	5	3	0	5	5	5
Total	3	2		1	1		1	1	1

 $1-5 \to 1, \qquad \qquad 6-10 \to 2, \qquad \qquad 11-15 \to 3$

	RSE C	ODE	COURSE NAME		L	Т	P	C
ХМТ	603A		LINEAR PROGRAMMING		4	2	0	6
С	Р	Α			L	Т	Р	Н
5	0.5	0.5			4	2	0	6
PRE	REQUI	SITE: 1	NIL					
Cour	se outc	omes:		Do	main		Lev	vel
		-	Solution, Solve LPP using Simplex Method, Phase Method.	Cog	nitive	R	emem Appl	
			Programming problem Formulation of Primal nd Simplex Method.	-	nitive omoto		Appl Gui Resp	ded
soluti appro	on us ximatio	ing N on metho	ation Problems, finding initial basic feasible orth West Corner Rule and Vogel's od, Solve unbalanced Transportation nt Problems and Routing Problems.	Cog	nitive		Appl	ying
mach	ines, Pr	oblems	with 'n' jobs and 2 machines, Problems with 'n' jobs and 'k' with 'n' jobs and 2 machines, Problems with 2 jobs and 3 machines.	-	nitive ective		Appl Recei	
CO 5 game	: Solve s , maxi s , Mixe	Game T min and	Theory problems Two persons Zero sum I minimax principle, Games without saddle gies, using Graphical method and Dominance	Cog	nitive		Appl	ying
CO 5 game point prope	: Solve s , maxi s , Mixo erty.	Game T min and	Theory problems Two persons Zero sum I minimax principle, Games without saddle	Cog	nitive		Appl	
CO 5 game point prope UNIT	Solve s, maxi s, Mixe erty. F I	Game T min and ed strate	Theory problems Two persons Zero sum I minimax principle, Games without saddle				1	8
CO 5 game point prope UNIT Introd Meth	: Solve s, maxi s, Mixe erty. F I duction od – Big	Game T min and ed strate	Theory problems Two persons Zero sum I minimax principle, Games without saddle egies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr				1	8 2X
CO 5 game point prope UNIT Introd Meth UNIT	: Solve s, maxi s, Mixe erty. F I duction od – Big F II ty in Lin	Game T min and ed strate to conve g M Met	Cheory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr thod - Two Phase Method.	aphical	Solut	ion - S	1 Simple	8 8 8
CO 5 game point prope UNIT Introd Meth UNIT Duali - Dua	: Solve s, maxi s, Mixe erty. F I duction od – Big F II ty in Lin	Game T min and ed strate to conve g M Met	Cheory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr thod - Two Phase Method.	aphical	Solut	ion - S	1 Simple	8 ex 8 fethod
CO 5 game point prope UNIT Introd Meth UNIT Duali - Dual UNIT Trans soluti Optir	: Solve s, maxi s, Mixe erty. F I duction od – Big F II ty in Lin d Simple F III portation on using nality -	Game T min and ed strate to conve g M Met near Pro ex Meth on Proble g North Unbalar	Cheory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr thod - Two Phase Method.	- Duali - findin method plems: N	Solut ty and g initi - Mov Mathen	ion - S Simp al bas ving to natica	1 Simple 1 olex M 1 ic feas	8 ex ethod 8 sible
CO 5 game point prope UNIT Introd Meth UNIT Duali - Dua UNIT Trans soluti Optir form	: Solve s, maxi s, Mixe erty. F I duction f od – Big F II ty in Lif d Simple F III sportation on using nality - alation of	Game T min and ed strate to conve g M Met near Pro ex Meth on Proble g North Unbalar	Cheory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr thod - Two Phase Method. Ogramming: Formulation of Primal - Dual Pairs and ems: Mathematical formulation of the problem West Corner Rule and Vogel's approximation in aced Transportation Problems. Assignment Prob	- Duali - findin method plems: N	Solut ty and g initi - Mov Mathen	ion - S Simp al bas ving to natica	1 Simple 1 olex M 1 ic feas	8 ex 8 ethod 8 sible
CO 5 game point prope UNIT Introd Meth UNIT Duali - Dual - Dual UNIT Trans soluti Optir form UNIT	Solve s, maxi s, Mixe erty. F I duction f od – Big F II ty in Lin d Simple F III sportation on using nality – alation of F IV encing F	Game T min and ed strate to conve g M Met near Pro ex Meth on Proble g North Unbalan of Assig	Cheory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr thod - Two Phase Method. Ogramming: Formulation of Primal - Dual Pairs and ems: Mathematical formulation of the problem West Corner Rule and Vogel's approximation in aced Transportation Problems. Assignment Prob	- Duali - Duali - findin method plems: N ting Pro	Solut ty and g initi - Mov Mathen oblems with '	ion - S Simp al bas ring to natica s.	1Simple1olex M1ic feasowardsal1os and	8 ex ethod 8 sible 5
CO 5 game point prope UNIT Introd Meth UNIT Duali - Dua UNIT Trans soluti Optir form UNIT Seque mach	Solve s, maxi s, Mixe erty. F I duction od – Big F II ty in Lin d Simple F II sportation on using nality - ilation of F IV encing F ines- Pr	Game T min and ed strate to conve g M Met near Pro ex Meth on Proble g North Unbalan of Assig	Cheory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr thod - Two Phase Method. ogramming: Formulation of Primal - Dual Pairs and eems: Mathematical formulation of the problem West Corner Rule and Vogel's approximation aced Transportation Problems. Assignment Prob nment Problems - Assignment algorithm – Rou s: Problems with 'n' jobs and 'k' machines - Pr	- Duali - Duali - findin method plems: N ting Pro	Solut ty and g initi - Mov Mathen oblems with '	ion - S Simp al bas ring to natica s.	1Simple1olex M1ic feasowardsal1os and	8 ex 8 ethod 8 sible 5 8 2
CO 5 game point prope UNIT Introd Meth UNIT Duali - Dua UNIT Trans soluti Optir form UNIT Seque mach UNIT Game	: Solve s, maxi s, Mixe erty. F I duction f od – Big f II ty in Lin d Simple f II sportation on using nality - alation of f IV encing F ines- Pr f V e Theory	Game T min and ed strate to conve g M Met near Pro ex Meth on Proble g North Unbalar of Assig Problems	Cheory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Gr thod - Two Phase Method. ogramming: Formulation of Primal - Dual Pairs and eems: Mathematical formulation of the problem West Corner Rule and Vogel's approximation aced Transportation Problems. Assignment Prob nment Problems - Assignment algorithm – Rou s: Problems with 'n' jobs and 'k' machines - Pr	- Duali - Duali - findin method olems: N ting Pro oblems obs and	Solut ty and g initi - Mov Mather oblems with ' 3 mad	ion - S Simp al bas ving to natica s. n' job chines	1 Simple 1 olex M 1 ic feas owards al 1 os and 3. 1	8 8 8 8 8 8 8 3 8 8 2 8
CO 5 game point prope UNIT Introd Meth UNIT Duali - Dua UNIT Trans soluti Optir form UNIT Seque mach UNIT Game	: Solve s, maxi s, Mixe erty. F I duction f od – Big f II ty in Lin d Simple f II sportation on using nality - alation of f IV encing F ines- Pr f V e Theory	Game T min and ed strate to conve g M Met near Pro ex Meth on Proble g North Unbalar of Assig Problems	Theory problems Two persons Zero sum I minimax principle, Games without saddle ogies, using Graphical method and Dominance ex sets - Mathematical Formulation of LPP - Great thod - Two Phase Method. ogramming: Formulation of Primal - Dual Pairs od ems: Mathematical formulation of the problem West Corner Rule and Vogel's approximation in ced Transportation Problems. Assignment Prob ment Problems - Assignment algorithm – Rou s: Problems with 'n' jobs and 'k' machines - Pr with 2 jobs and k machines - Problems with 2 j persons Zero sum games - maximin and minima	- Duali - Duali - findin method olems: N ting Pro oblems obs and	Solut ty and g initi - Mov Mathen oblems with ' . 3 mag	ion - S Simp al bas ving to natica s. n' job chines Game	1Simple1olex M1olex feas1os and3.1os and3.1s with	8 8 8 8 8 8 8 3 8 8 2 8

- KantiSwarup, P. K. Gupta& Man Mohan, "Operations Research", Sultan Chand& Sons, New Delhi, Twelfth Revised Edition, 2005.
 - Unit 1: chapter 2: 2.1, 2.2, chapter 3: 3.2, chapter 4; 4.1, 4.4.
 - Unit 2: chapter 5: 5.2, 5.3, 5.7, 5.9.
 - Unit 3: Chapter 10: 10.2, 10.9, 10.14, Chapter 11: 11.2, 11.3.
 - Unit 4: Chapter 12: 12.1 12.6.
 - Unit 5: Chapter 17: 17.1 17.7.

REFERENCES

- 1. P. K. Gupta & D. S. Hira, "Operations Research", S. Chand & Company Ltd., New Delhi, 2002.
- 2. J. K. Sharma, "Operations Research theory and its applications", 2nd Edition, Macmillan, New Delhi, 2006.
- 3. R. Panneerselvam, "Operations Research", Prentice Hall of India Pvt. Ltd., New Delhi, 2002.

Table 1: COs VS POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Scaled Value	15	10	0	5	3	0	5	5	5
Total	3	2		1	1		1	1	1

 $1-5 \rightarrow 1$, $6-10 \rightarrow 2$, $11-15 \rightarrow 3$ 0 - No Relation, 1 - Low Relation, 2- Medium Relation, 3- High Relation

M.SC (MATHEMATICS) I SEMESTER

COUR	RSE NA	ME		AL	GEBRA	- I	L	Т	Р	С
COUR	RSE CO	ODE		Y	YMA101		4	1	0	5
С	Р	Α					L	Т	Р	Н
5	0	0					4	1	0	5
PRERE	QUISI	TE	Basic	es of sets, relation	ons and fu	inctions			·	
On succ	essful	comple	tion of	f this course, th	ne studen	ts will be able to:				
			COUI	RSE OUTCOM	1ES		DOMA	IN	LE	VEL
CO 1		structC ee 2 and		table for the g	given syn	nmetric group of	Cognit	ive	App	olying
CO 2	Exte	nd grou	ip stru	cture to finite p	ermutatio	n groups	Cognit	ive	Unders	standing
CO 3	Clast theorem		oups o	of finite order	upto 12	0 using Sylow's	Cognit	ive	Anal	lyzing
CO 4	Iden doma	•	e quo	tient field of	the give	n integral	Cognit	ive	Арр	lying
CO 5	Cate	gorize	the fac	torization of po	lynomials	s over a field	Cognit	ive	Ana	lyzing
UNIT 1										15 hours
Binary C	Operatio	ons – G	roups	- Subgroups – F	ermutatio	ons I – Permutation	s II – Cy	clic G	roups	
UNIT 2										15 hours
Isomorp	hisms	– Direc	et Proc	lucts – Finitely	Generat	ed Abelian groups	s - Grou	ps of	Cosets	- Normal
subgrou	ps and	factor g	roups-	Homomorphis	ms					
UNIT 3										15 hours
Series of	f Group	ps – Iso	morph	ism theorems-]	Proof of t	he Jordan Holder t	heorem-	-Grou	p action	on a set-
Applicat	tions of	G-sets	to cou	nting - Sylow's	theorems	s – Applications of S	ylow the	orems		
UNIT 4										15 hours
C	Ŭ	l Doma	ins - S	ome non-comm	utative ex	kamples – The Field	d of quot	ients –	Quotie	nt rings
and Idea										
UNIT 5										15 hours
Homom	orphisr	n of F	Rings	- Rings of p	olynomia	als – Factorizatio	n of Po	olynor	nialsove	rafield –
		ins-Ga	issian	integers and no	rms					
LECT	URE	6	0	TUTORIAL	15	PRACTICAL	0	TC	TAL	75
TEXT F	BOOK									

1. John B. Fraleigh, A First Course in Abstract Algebra, Narosa Publishing House, Third edition, 1992.

UNIT – I Chapter 1, 2, 3,4,5,6

UNIT – II Chapter 7,8,9,11,12,13

UNIT – III Chapter 14,15,16,17,18,19

UNIT – IV Chapter 23,24,25,26,27,28

UNIT – V Chapter 29,30,31,33,34

REFERENCES

1.P.B. Bhattacharya et al., Basic Abstract Algebra, 2nd edition, Cambridge University Press, 1995

2.I.N.Herstein, Topics in Algebra, John Wiley, 2nd Edition, 1975.

3.R. Solomon, Abstract Algebra, AMS Indian edition, 2010.

CO Vs PO

	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	2	1	3	1	0	1	1
CO 3	3	3	3	1	3	1	1	1	1
CO 4	3	3	3	1	3	1	1	1	1
CO 5	3	3	3	1	3	1	1	1	1
TOTAL	15	15	14	6	15	5	4	1	5
SCALED VALUE	3	3	3	2	3	1	1	1	1
0 - No Relation, 1 – L	ow Relatio	on, 2- Me	edium Re	elation, 3	- High R	elation	1	1	L

 $1 ext{-} 5 ext{-} 1, 6 ext{-} 10 ext{-} 2, 11 ext{-} 15 ext{-} 3$

COU	RSE N	AME		REAL	ANALYS	SIS - I	L	Т	P	C
COU	RSE C	ODE		Ŋ	(MA102		4	1	0	5
С	Р	Α					L	Т	Р	Н
5	0	0					4	1	0	5
PRERI	EQUIS	ITE	Basic	c concepts of rea	ıl number	'S				
On suc	cessful	comple	tion o	f this course, th	e studen	ts will be able to:				
			COU	RSE OUTCOM	IES		DOMA	IN	LE	VEL
CO 1	_	lain th		-	number	system and its	Cognit	ive	Under	standing
CO 2	Exp	lain the	conce	pts of metric spa	ace and it	s properties	Cognit	ive	Under	standing
CO 3	App	oly conv	ergenc	e sequence in m	etric space	ce	Cognit	ive	App	olying
CO 4		s sify th netricall		racterization o	f compa	ct metric space	Cognit	ive	Ana	lyzing
CO 5		ize the l ing give		_	inciple in	formulating and	Cognit	ive	Apj	olying
UNIT 1	L									15 hours
Sets an	d Func	tions, M	Iathem	natical Induction	n, Finite	and Infinite sets.	Real Nur	nber	system:	Algebraic
and Orc	ler prop	perties: I	nfimu	m, Supremum, I	LUB Axie	om. Countable and	uncount	able s	ets.	
UNIT 2	2									15 hours
Metric	spaces	– Defini	tion ar	nd examples - op	pen balls	and open sets				
UNIT 3	3									15 hours
Sequen	ces and	Series	of rea	al numbers – lin	mit theor	ems – monotone	sequence	s – C	Cauchy c	riterion –
limsup,	liminf	- Conve	ergent	sequences in me	etric spac	es – limit and clus	ter point	s – Ca	auchy se	quences –
Bounde	ed sets -	- Dense	sets.							
UNIT 4										15 hours
Continu	ious fu	nctions -	– Equi	valent Definitio	ns of Cor	ntinuity – Uniform	Continu	ity - I	Limit of	a function
– Disco	ontinui	ties of a	a Real	Valued functi	on - Co	mpact spaces and	their p	ropert	ies – C	ontinuous
		ompact	spaces	- Characterizati	on of Cor	npact Metric space	es.			
UNIT 5										15 hours
Connec	tedness	: Conne	ected s	spaces – Comp	lete metri	ic spaces – Exam	ples- Bai	ireCat	egory T	heorem –
		ction Pr		1			I			
LECT		6	0	TUTORIAL	15	PRACTICAL	0	T	DTAL	75
TEXT						Ŀ.,				
1. R.G	B. Bartle	e and D.	R. She	rbert,Introduction	on to Rea	l Analysis 3 rd Edn,.	John Wil	ey &S	Sons, 200)0.

2. S.Kumaresan, Topologyof MetricSpaces, NarosaPublishingHouse, New Delhi, 2005.
UNIT–I- Chapters 1 and 2from [1]
UNIT–II - Chapter1from [2]
UNIT–III-Chapter3from [1]andChapter2sections 2.1to2.5 from[2]
UNIT–IV-Chapter3, Chapter4from[2](sections3.3and 3.6omitted) and Chapter5 from [1]
UNIT-V-Chapter 5section5.1andChapter 6sections 6.1,6.3and6.4(section6.2,6.3.16 and6.3.17 omitted) from [2]

REFERENCES

- 1. EdwardD.Gaughan, IntroductiontoAnalysis, AMS, Indianedition, 2010.
- 2. KennethA. Ross, Elementary Analysis: The Theory of Calculus, Springer Verlag, 2004.
- 3. WalterRudin, Principles of Mathematical Analysis, Third Edition, McGraw Hill, 1976.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	2	1	3	1	0	1	1
CO 3	3	3	3	2	3	1	1	1	1
CO 4	3	3	3	3	3	1	2	1	1
CO 5	3	3	3	2	3	1	1	1	1
TOTAL	15	15	13	9	15	5	4	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1

COs VS POs

1-5→1, 6-10→2, 11-15→3

COU	RSE N	AME	GRAI	PH THE	ORY	L	Т	Р	C
COU	RSE C	ODE	N N	/MA103		4	1	0	5
С	Р	A				L	Т	Р	Н
5	0	0				4	1	0	5
PRER	EQUIS	ITE	Basic concepts of Gr	aphs					
On suc	cessful	comple	etion of this course, th	e studen	ts will be able to:				
			COURSE OUTCOM	IES		DOMA	IN	LE	VEL
CO 1	Exp	olainbasi	ic concepts of graphs			Cognit	ive	Unders	standing
CO 2	Exp	lain ver	tex connectivity and e	dge conn	ectivity in graphs	Cognit	ive	Unders	standing
CO 3	Exp	lainEul	erian Graphs and Ham	iltonian (Graphs	Cognit	ive	Unders	standing
CO 4		-	ring principle for sol d Edge coloring	lving pro	blems in Vertex	Cognit	ive	Арр	lying
CO 5	Den	nonstra	te planar graphs			Cognit	ive	Unders	standing
UNIT	L			Basic Re	sults		I		15 hours
Basic C	Concept	ts - Sub	graphs - Degrees of V	/ertices -	Paths and Conne	ctedness	Operati	ons on	Graphs -
Directe	d Grap	hs: Basi	c Concepts - Tourname	ents.					
UNIT	2			Connect	ivity				15 hours
Vertex	Cuts a	nd Edge	Cuts - Connectivity a	nd Edge	- Connectivity, Tre	ees:Defin	itions,	Charac	terization
and Sin	nple Pr	operties	- Counting the Number	er of Spar	ning Trees - Cayle	y's Form	ula.		
UNIT :	3		Independe	ent Sets a	and Matchings				15 hours
Vertex	Indepe	endent S	Sets and Vertex Cove	rings - I	Edge Independent	Sets -M	atching	gs and	Factors -
Euleria	n Grapl	ns - Han	niltonian Graphs.						
UNIT 4				aph Col	2				15 hours
Vertex	Colour	ing - Cı	ritical Graphs - Triang	le - Free	Graphs - Edge Co	olourings	of Gra	phs - C	Chromatic
Polyno									
UNIT !				Planar	-				15 hours
		-	Graphs - Euler Forr		-				-
_			ane Graph - The Four	-Colour '	Theorem and the H	Heawood	Five-C	Colour '	Theorem-
		Theorem							
LECI			0 TUTORIAL	15	PRACTICAL	0	ΤΟ	ΓAL	75
TEXT									
_			ntroduction to Graph T	heory", I	Prentice Hall of Ind	lia, Secoi	nd Edit	ion, 200	02.
REFE									
1 Bor	ndv J A	and M	lurty U. S. R., "Graph"	Theory"	Springer 2008				

- 2. Balakrishnan R. and Ranganathan K., "A textbook of Graph Theory", Springer, 2012.
- 3. Graham R.L., Rothschild B.L and Spencer J.H., "Ramsey Theory", Wiley Publishers, Second Edition, 1990.
- Biggs N., "Algebraic Graph Theory", Cambridge Tracts in Mathematics 67, Cambridge University Press, 1994. MX8003 Algebraic Theory of Semigroups.

COS VS POS									
	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	3	2	3	1	1	1	1
CO 3	3	3	2	1	3	1	0	1	1
CO 4	3	3	3	2	3	1	1	1	1
CO 5	3	3	2	1	3	1	0	1	1
TOTAL	15	15	12	7	15	5	2	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1
0 - No Relation, 1 – L	ow Relatio	on, 2- Me	edium Re	elation, 3	- High R	elation	•	•	

COs VS POs

1-5→1, 6-10→2, 11-15→3

COI	URSE N	AME	ORDINARY DIFFERENTIAL EQUATIONS	5 L	Т	P	C
CO	URSE C	ODE	YMA104	4	1	0	5
С	Р	A		L	Т	Р	Н
5	0	0		4	1	0	5
PREF	REQUIS	ITE	Knowledge in differentiation				
On su	ıccessful	comple	tion of this course, the students will be able to:				
			COURSE OUTCOMES	DOMA	IN	LI	EVEL
CO 1			theory of power series when solving second ential equations	Cognit	ive	Ар	plying
CO 2		-	problems arises in mathematical physics using f Bessel functions	Cognit	ive	Ар	plying
CO 3		-	rd's theorem for calculating exact solution for a value problem	Cognit	ive	Ар	plying
CO 4	eige		ne classical vibrating string problem through and eigenfunctions with given boundary	Cognit	ive	Ana	alyzing
CO 5		ntify cr ations	itical points and phase portrait of nonlinear	Cognit	ive	Ар	plying
UNIT	1						15 hou
The g	general so	olution of	of the homogeneous equation – The use of one k	nown so	lutio	n to find	another
The n	nethod c	of variat	ion of parameters - Power Series solutions. A r	eview of	f pov	ver serie	es – Ser
soluti	ons of fi	st order	equations - Second order linear equations; Ordina	ary points	5.		
UNIT	2						15 hou
Regul	ar Sing	ılar Poi	nts – Gauss's hypergeometric equation – The	e Point	at in	finity -	Legend
Polyn	omials –	Bessel	functions – Properties of Legendre Polynomials and	d Bessel	func	tions.	
UNIT	3						15 hou
Linea	r System	s of Fir	st Order Equations – Homogeneous Equations w	ith Cons	tant	Coeffici	ents – T
Existe	ence and	Unique	ness of Solutions of Initial Value Problem for F	irst Orde	er Or	dinary I	Different
	ions – T	he Meth	od of Solutions of Successive Approximations and	l Picard's	s The	orem.	
Equat	34						15 hou
-				roperties	of	Solution	ng Stu
UNIT Oscill		•	nd Boundary value problems – Qualitative P – Eigenvalues, Eigenfunctions and the Vibrating	•	01		15– Stu

Nonlinearequat	ions:Autonom	ousSystems;t	hephasep	laneandi	tsphenom	ena–Typ	es		of
criticalpoints;St	ability – criti	cal points an	d stability	y for lin	ear system	ms – Sta	bilitybyL	Liapunov	's direct
method – Simpl	le critical poin	tsof nonlinea	r systems.						
LECTURE	60	TUTORIAI	15	PRA	CTICAI	. 0	ТО	TAL	75
TEXT BOOK									
1.G.F. Simmon	s, Differential	Equations wi	th Applic	ations ar	nd Histori	cal Notes	s, TMH, 1	New Del	hi,
1974.									
UNIT – I -Chap	oter 3: Section	s 15, 16, 19 a	nd Chapte	er 5: Sec	tions 25 t	o 27			
UNIT – II -Cha	pter 5: Section	ns 28 to 31 an	d Chapter	6: Secti	ons 32 to	35			
UNIT – III -Cha	apter 7: Sectio	ons 37, 38 and	Chapter	11: Secti	ions 55, 5	6			
UNIT – IV -Ch	apter 4: Sectio	ons 22 to 24							
UNIT – V -Cha	pter 8: Section	ns 40 to 44							
REFERENCE	S								
			al Equatio	ng AM	S Indian I	Edition. 2	011		
1. M.E. Taylor	r, Introduction	to Differenti	ui Equatio	nis, Am	5 mulan I				
•	r, Introduction Differential Eq		•						
•	Differential Eq	uations and T	heir Appl	ications	, Springer	, 1992.		raw Hill,	1955.
2. M. Braun, I	Differential Eq	uations and T	heir Appl	ications	, Springer	, 1992.		raw Hill,	1955.
 M. Braun, E E.A. Coddin 	Differential Eq	uations and T Levinson, The	heir Appl	ications	, Springer	, 1992.		raw Hill, PO8	1955. PO9
 M. Braun, E E.A. Coddin 	Differential Eq ngton and N. I POs	uations and T Levinson, The D1 PO2	Their Appl	ications dinary D	, Springer Differentia	r, 1992. l Equatio	ons, McG	1	1
 2. M. Braun, E 3. E.A. Coddin COs VS F CO 1 	Differential Eq ngton and N. I POs PC	uations and T Levinson, The D1 PO2 3	Their Appletory of Or PO3	ications dinary D PO4	, Springer Differentia PO5	r, 1992. 1 Equation PO6	ons, McG PO7	PO8	PO9
 M. Braun, E E.A. Coddin 	Differential Equation and N. I POs PO3 3	uations and T Levinson, The D1 PO2 3 3	Their Appleory of Or PO3 3	ications dinary D PO4 2	, Springer Differentia PO5 3	r, 1992. I Equation PO6 1	ons, McG PO7 1	PO8	PO9
2. M. Braun, E 3. E.A. Coddin COs VS F CO 1 CO 2	Differential Equation and N. I POs POs 3 3	uations and T Levinson, The D1 PO2 3 3 3	Their Appleory of Or PO3 3 3	ications dinary D PO4 2 2	, Springer Differentia PO5 3 3	r, 1992. I Equation PO6 1 1	ons, McG PO7 1 1	PO8 1 1	PO9 1 1

SCALED VALUE

0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation

 $1 \text{-} 5 \rightarrow 1, 6 \text{-} 10 \rightarrow 2, 11 \text{-} 15 \rightarrow 3$

TOTAL

COUR	SE NA	AME	OPTIMIZATION TECHNIQUES	L	T	Р	С
COUR	SE C	ODE	YMA105	4	1	0	5
С	Р	Α		L	Т	Р	Η
5	0	0		4	1	0	5
PRERE	QUIS	ITE	Probability and random process				
On succ	essful	comple	tion of this course, the students will be able to:				
			COURSE OUTCOMES	DOMA	IN	LE	VEL
	-		e systematic way of approaching a decision				
CO 1		• •	et desired outcome of where the possibility of	Cognit	ive	Unders	standing
			of different outcomes are evaluated in advance.				
CO 2			bilities in project evaluation techniques using	Cognit	ive	App	lying
		T, CPM		- 0		r r	5 8
CO 3	-	lain th	5 5 6	Cognit	ive	Unders	standing
	1	1 '	oncepts, and techniques	0			
CO 4			order polynomial function using Newton	Cognit	ive	Арр	lying
	-	hson Me		e			
CO 5		•	irect search method and gradient method for	Cognit	ive	Арр	lying
TINITT 1	obta	ining op	timal solutions for the given function DECISION THEORY				15 hours
UNIT 1					Desta		
-			ry Approach - Types of Decision-Making Environ				-
	•		n Making under Risk - Posterior Probabilities an	u bayes	an A	marysis -	Decisio
	VC1C	Decisi	on Making with Utilities			-	
	alysis -	- Decisi	on Making with Utilities PROJECT MANAGEMENT: PERT AND (`PM		- 	
UNIT 2			PROJECT MANAGEMENT: PERT AND (- PF		15 hours
UNIT 2 Basic Di	fferen	ces betw	PROJECT MANAGEMENT: PERT AND (veen PERT and CPM - Steps in PERT/CPM Tec	chniques		RT/CPM	15 hours Networ
UNIT 2 Basic Di Compone	fferen ents a	ces betw nd Prec	PROJECT MANAGEMENT: PERT AND (veen PERT and CPM - Steps in PERT/CPM Tec edence Relationships - Critical Path Analysis - 2	chniques Probabil		RT/CPM	15 hours Networ
UNIT 2 Basic Di Compone Project ti	fferen ents a me-co	ces betw nd Prec ost Trade	PROJECT MANAGEMENT: PERT AND (ween PERT and CPM - Steps in PERT/CPM Tec edence Relationships - Critical Path Analysis - e Off - Updating the Project - Resource Allocation	chniques Probabil	ity in	RT/CPM PERT A	15 hours Networ Analysis
UNIT 2 Basic Di Compone Project ti UNIT 3	fferen ents a me-co	ces betw nd Prec ost Trade	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Tece edence Relationships - Critical Path Analysis - Step Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM	chniques Probabil	ity in S	RT/CPM PERT A	15 hours Networ Analysis 15 hours
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning	fferen ents a me-co of In	ces betw nd Prec ost Trade E ventory	PROJECT MANAGEMENT: PERT AND (veen PERT and CPM - Steps in PERT/CPM Tec edence Relationships - Critical Path Analysis - e Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of	chniques Probabil IODEL S of Carryi	ity in S ng In	RT/CPM PERT A	15 hours Networ Analysis 15 hours Feature
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven	fferen ents a me-co of In tory S	ces betw nd Prec ost Trade E ventory system -	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Tece edence Relationships - Critical Path Analysis - Step Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM	chniques Probabil IODELS of Carryi tory Mo	ity in 5 ng In dels y	RT/CPM PERT A ventory - with no s	15 hours Networ Analysis 15 hours Feature hortage
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Invent	fferen ents a me-co of In tory S histic	ces betw nd Prec ost Trado E ventory ystem - Invento	PROJECT MANAGEMENT: PERT AND O ween PERT and CPM - Steps in PERT/CPM Teo edence Relationships - Critical Path Analysis - e Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage o Inventory Model building - Deterministic Inven	chniques Probabil I IODELS of Carryi tory Mo Control	ity in S ng In dels Mod	RT/CPM PERT A ventory - with no s els:Single	15 hours Networ Analysis 15 hours Feature hortage
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Invent Determin Probabili	fferen ents a me-co of In tory S histic	ces betw nd Prec ost Trado E ventory ystem - Invento	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Tece edence Relationships - Critical Path Analysis - Tece e Off - Updating the Project - Resource Allocation ETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inventory ory with ShortagesProbabilistic Inventory O	chniques Probabil I IODELS of Carryi tory Mo Control	ity in S ng In dels Mod	RT/CPM PERT A ventory - with no s els:Single p cost.	15 hours Networ Analysis 15 hours Feature hortage e Period
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4	fferen ents a me-co of In tory S histic	ces betw nd Prec ost Trade E ventory system - Invente fodels w	PROJECT MANAGEMENT: PERT AND O ween PERT and CPM - Steps in PERT/CPM Teo edence Relationships - Critical Path Analysis - e Off - Updating the Project - Resource Allocation ETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inven ory with ShortagesProbabilistic Inventory O vithout Setup cost - Single Period Probabilities Mo	Chniques Probabil IODELS of Carryi tory Mo Control odel with	ity in S ng In dels Mod Setu	RT/CPM PERT A eventory - with no s els:Single p cost.	15 hours Network Analysis 15 hours Feature hortage
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstr	fferen ents a me-cc of In tory S histic istic M	ces betw nd Prec ost Trade E ventory system - Invento fodels w Problem	PROJECT MANAGEMENT: PERT AND O ween PERT and CPM - Steps in PERT/CPM Tec edence Relationships - Critical Path Analysis - Tec e Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inventory ory with ShortagesProbabilistic Inventory O without Setup cost - Single Period Probabilities Mo Classical Optimization Theory	Chniques Probabil IODELS of Carryi tory Mo Control odel with	ity in S ng In dels Mod Setu	RT/CPM PERT A eventory - with no s els:Single p cost.	15 hours Networ Analysis 15 hours Feature hortage e Perior
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstr	fferen ents a me-cc of In tory S histic istic M	ces betw nd Prec ost Trade E ventory system - Invento fodels w Problem	PROJECT MANAGEMENT: PERT AND O ween PERT and CPM - Steps in PERT/CPM Tec edence Relationships - Critical Path Analysis - e Off - Updating the Project - Resource Allocation ETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inven ory with ShortagesProbabilistic Inventory O vithout Setup cost - Single Period Probabilities Mo Classical Optimization Theory ms-Necessary and Sufficient Conditions- The New	Chniques Probabil IODELS of Carryi tory Mo Control odel with	ity in S ng In dels Mod Setu	RT/CPM PERT A ventory - with no s els:Single p cost. Method-	15 hours Networ Analysis 15 hours Feature hortage Period 15 hours
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstri Constrain UNIT 5	fferen ents a me-cc of In tory S histic stic M rained ned Pr	ces betw nd Prec ost Trade E ventory ystem - Invento fodels w Problem oblems-	PROJECT MANAGEMENT: PERT AND Over PERT and CPM - Steps in PERT/CPM Tece edence Relationships - Critical Path Analysis - Tece Control - Updating the Project - Resource Allocation Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inventory ory with ShortagesProbabilistic Inventory Of vithout Setup cost - Single Period Probabilities Mod Classical Optimization Theory ms-Necessary and Sufficient Conditions- The New Equality Constraints- Inequality Constraints.	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rap	ity in S ng In dels Mod Setu hson	RT/CPM PERT A ventory - with no s els:Single p cost.	15 hours Networ Analysis 15 hours Feature hortage Period 15 hours
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstri Constrain UNIT 5 Unconstri	fferen ents a me-cc of In tory S nistic sistic M rained ned Pr	ces bety nd Prec ost Trade E ventory ystem - Invento fodels w Problems- oblems-	PROJECT MANAGEMENT: PERT AND O ween PERT and CPM - Steps in PERT/CPM Tec edence Relationships - Critical Path Analysis - e Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inven ory with ShortagesProbabilistic Inventory O without Setup cost - Single Period Probabilities Mo Classical Optimization Theory ms-Necessary and Sufficient Conditions- The New Equality Constraints- Inequality Constraints. Nonlinear Programming Algorithms	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rap	ity in S ng In dels Mod Setu hson	RT/CPM PERT A ventory - with no s els:Single p cost.	15 hours Networ Analysis 15 hours Feature hortage Period 15 hours
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstri Constrain UNIT 5 Unconstri	fferen ents a me-co of In tory S histic astic N rained rained rained c Prog	ces bety nd Prec ost Trade E ventory ystem - Invento fodels w Problems- oblems-	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Tece edence Relationships - Critical Path Analysis - Tece Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inventory Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inventory Of without Setup cost - Single Period Probabilities Model Classical Optimization Theory ns-Necessary and Sufficient Conditions- The New Equality Constraints- Inequality Constraints. Nonlinear Programming Algorithms thms- Direct Search Method- Gradient Mett g- Chance-Constrained Programming	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rap	ity in S ng In dels Mod Setu hson D nstra	RT/CPM PERT A ventory - with no s els:Single p cost.	15 hours Networ Analysis 15 hours Feature hortage Period 15 hours
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstr Constrain UNIT 5 Unconstr Quadrati LECTU	fferen ents a me-cc of In tory S histic istic M rained ned Pr cained c Prog	ces betw nd Prec ost Trade E ventory system - Invento fodels w Problems- oblems- Algori grammin	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Text edence Relationships - Critical Path Analysis - Text e Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inventory ory with ShortagesProbabilistic Inventory Over vithout Setup cost - Single Period Probabilities Mo Classical Optimization Theory ns-Necessary and Sufficient Conditions- The New Equality Constraints- Inequality Constraints. Nonlinear Programming Algorithms thms- Direct Search Method- Gradient Met g- Chance-Constrained Programming	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rapl hod- Co	ity in S ng In dels Mod Setu hson D nstra	RT/CPM PERT A ventory - with no s els:Single p cost. Method-	15 hours Networ Analysis 15 hours Feature hortage Perior 15 hours gorithms
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstra UNIT 5 Unconstra Quadrati LECTU TEXT B	fferen ents a me-co of In tory S nistic stic N rained rained c Prog JRE	ces betw nd Prec ost Trado E ventory system - Invento fodels w Problem oblems- algori grammin	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Text edence Relationships - Critical Path Analysis - Text e Off - Updating the Project - Resource Allocation DETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage of Inventory Model building - Deterministic Inventory ory with ShortagesProbabilistic Inventory Over vithout Setup cost - Single Period Probabilities Mo Classical Optimization Theory ns-Necessary and Sufficient Conditions- The New Equality Constraints- Inequality Constraints. Nonlinear Programming Algorithms thms- Direct Search Method- Gradient Met g- Chance-Constrained Programming	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rapl hod- Co	ity in S ng In dels Mod Setu hson bnstra	RT/CPM PERT A ventory - with no s els:Single p cost. Method-	15 hours Networ Analysis 15 hours Feature hortage Perio 15 hours gorithms 75
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inven Determin Probabili UNIT 4 Unconstr UNIT 5 Unconstrain Quadrati LECTU TEXT B 1.J.K.Sha	fferen ents a me-co of In tory S nistic stic N rained rained c Prog JRE	ces betw nd Prec ost Trado E ventory system - Invento fodels w Problem oblems- algori grammin	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Textveen PERT and CPM - Steps in PERT/CPM Textedence Relationships - Critical Path Analysis - Texte Off - Updating the Project - Resource AllocationDETERMINISTIC INVENTORY CONTROLMControl - Functional Classification - Advantage ofInventory Model building - Deterministic Inventoryory with ShortagesProbabilistic Inventory Ofvithout Setup cost - Single Period Probabilities MotoClassical Optimization Theoryns-Necessary and Sufficient Conditions- The NewEquality Constraints- Inequality Constraints.Nonlinear Programming Algorithmsthms- Direct Search Method- Gradient Mettg- Chance-Constrained ProgrammingDTUTORIAL15PRACTICAL	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rapl hod- Co	ity in S ng In dels Mod Setu hson bnstra	RT/CPM PERT A ventory - with no s els:Single p cost. Method-	15 hours Networ Analysis 15 hours Feature hortage Perio 15 hours gorithms 75
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inver Determin Probabili UNIT 4 Unconstr UNIT 5 Unconstrain UNIT 5 Unconstrain Quadrati LECTU TEXT B 1.J.K.Sha 2007 Unit I - C	fferen ents a me-cc of In tory S histic istic N rained ned Pr rained rained Pr c Prog JRE OOK arma,	ces bety nd Prec ost Trado E ventory ystem - Invento fodels w Problems- oblems- Algori grammin 60 "Operation er-11 (Se	PROJECT MANAGEMENT: PERT AND Over PERT and CPM - Steps in PERT/CPM Textveen PERT and CPM - Steps in PERT/CPM Textedence Relationships - Critical Path Analysis - Texte Off - Updating the Project - Resource Allocation PETERMINISTIC INVENTORY CONTROLM Control - Functional Classification - Advantage ofInventory Model building - Deterministic Inventoryory with ShortagesProbabilistic Inventory Ovithout Setup cost - Single Period Probabilities MotoClassical Optimization Theoryms-Necessary and Sufficient Conditions- The New• Equality Constraints- Inequality Constraints.Nonlinear Programming Algorithmsthms- Direct Search Method- Gradient Methodg- Chance-Constrained Programming.0TUTORIAL15PRACTICALtions Research Theory and Applications", Thirdection 11.1 - 11.8)	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rapl hod- Co	ity in S ng In dels Mod Setu hson bnstra	RT/CPM PERT A ventory - with no s els:Single p cost. Method-	15 hours Networ Analysis 15 hours Feature hortage Perio 15 hours gorithms 75
UNIT 2 Basic Di Compone Project ti UNIT 3 Meaning of Inver Determin Probabili UNIT 4 Unconstr UNIT 5 Unconstrain UNIT 5 Unconstrain Quadratii LECTU TEXT B 1.J.K.Sha 2007 Unit I - C	fferen ents a me-cc of In tory S histic istic N rained ned Pr rained rained Pr c Prog JRE OOK arma,	ces bety nd Prec ost Trado E ventory ystem - Invento fodels w Problems- oblems- Algori grammin 60 "Operation er-11 (Se	PROJECT MANAGEMENT: PERT AND Oveen PERT and CPM - Steps in PERT/CPM Textveen PERT and CPM - Steps in PERT/CPM Textedence Relationships - Critical Path Analysis - Texte Off - Updating the Project - Resource AllocationDETERMINISTIC INVENTORY CONTROLMControl - Functional Classification - Advantage ofInventory Model building - Deterministic Inventoryory with ShortagesProbabilistic Inventory Ofvithout Setup cost - Single Period Probabilities ModelClassical Optimization Theoryms-Necessary and Sufficient Conditions- The NewEquality Constraints- Inequality Constraints.Nonlinear Programming Algorithmsthms- Direct Search Method- Gradient Method-g- Chance-Constrained ProgrammingDTUTORIAL15PRACTICAL	chniques Probabil IODELS of Carryi tory Mo Control odel with ton-Rapl hod- Co	ity in S ng In dels Mod Setu hson bnstra	RT/CPM PERT A ventory - with no s els:Single p cost. Method-	15 hours Networ Analysis 15 hours Feature hortage Period 15 hours gorithms 75

2.Hamdy A Taha, Operations Research: An Introduction, Eighth Edition, University of Arkansas, Fayetteville, PEARSON Prentice Hall. © 2007 by Pearson Education, Inc.

Unit IV-Chapter 18 – Section 18.1.1, 18.1.2, 18.2.1, 18.2.2

Unit V-Chapter 19 – Section 19.1.1, 19.1.2, 19.2.2 and 19.2.3

REFERENCES

- 1. HillierF.S. andJ.Lieberman, "Introduction to Operations Research" (8th Edition), Tata McGraw Hill Publishing Company, New Delhi, 2006.
- 2. Beightler. C, D.Phillips, B. Wilde, "Foundations of Optimization" (2nd Edition) Prentice Hall Pvt Ltd., New York, 1979
- 3. Bazaraa, M.S; J.J.Jarvis, H.D.Sharall, "Linear Programming and Network flow", John Wiley and sons, New York, 1990.
- 4. Gross, D and C.M.Harris, "Fundamentals of Queueing Theory", (3rd Edition), Wiley and Sons,

New York, 1998.

 Hamdy A. Taha, "Operations Research" (sixth edition), Prentice - Hall of India PrivateLimited, New Delhi.2007

COs VS POs

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	3	2	3	1	1	1	1
CO 3	3	3	2	1	3	1	0	1	1
CO 4	3	3	2	1	3	1	0	1	1
CO 5	3	3	2	1	3	1	0	1	1
TOTAL	15	15	11	6	15	5	1	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1
0 - No Relation, 1 – Lo	w Relatio	on, 2- Me	edium Re	elation, 3	- High R	elation			

 $1 ext{-}5 ext{-}1, 6 ext{-}10 ext{-}2, 11 ext{-}15 ext{-}3$

COURSE NAME COURSE CODE		FUZZY SETS AND FUZZY LOGIC YMA1E1					Т 0	Р	С		
								0	3		
С	P	Α					L	Т	Р	Н	
3	0	0					3	0	0	3	
PRERE	QUISI	ТЕ	Basic	c concepts of set	S						
On succ	essful o	complet	tion o	f this course, th	e studer	nts will be able to:					
COURSE OUTCOMES DO						DOMA	DOMAIN LI				
CO 1 Compare the relationship between Crisp sets and Fuzzy sets						Cognit	ive	Applying			
CO 2 Explain operation on Fuzzy Sets						Cognit	ive	Unders	Understanding		
CO 3	Com	pare Fu	ızzy R	Relations and cris	sp relatio	ons	Cognit	ive	Applying		
CO 4	CO 4 Demonstrate the propositional calculus						Cognitive		Understanding		
CO 5	Explain the concepts of fuzzy logic						Cognitive		Understanding		
UNIT 1	Crisp Sets and Fuzzy Sets						I			9 hours	
Crisp set	s basic	definiti	ons -	the notion of fuz	zzy sets	- basic concepts of	fuzzy set	S			
UNIT 2	Operation on FuzzySets								9	9 hours	
Fuzzy co	mplem	ent - <mark>fu</mark>	zzy u	nion - fuzzy inte	rsection	- combination and	general a	ggreg	ation op	erations	
UNIT 3	NIT 3 Fuzzy Relations								9	9 hours	
Crisp an	d fuzzy	relatio	ons -	binary relation -	- equiva	lence and similarity	y relatior	ns - to	olerance	relations	
ordering	8										
UNIT 4	Classical Logic								9 hours		
Tautolog	ies - co	ontradic	tions	- equivalence - e	exclusive	e OR and exclusive	NOR - lo	ogical	proofs		
UNIT 5	Fuzzy Logic							9hours			
Fuzzy lo	gic - ap	proxim	ate re	asoning - fuzzy	tautolog	ies - contradictions	- equival	ence	and logic	cal proofs	
LECTU	JRE	45	5	TUTORIAL	0	PRACTICAL	0	TC	DTAL	45	
ТЕХТ В	OOKS	5							<u>.</u>		
1. Geor	ge J. K	lir& Ti	na A.	Folger, "Fuzzy	Sets, U	ncertainty, and Info	ormation"	', Prer	ntice Hal	l of Indi	
Pvt.]	Ltd., No	ew Delł	ni, 198	38							
2. Time	othy J.	Ross, '	'Fuzz	y Logic with E	ngineeri	ng Applications",	3rd editi	ion, N	IcGraw-	Hill. Inc	
2010											
REFER	ENCE	5									
1. Zimr	nerman	n. H	J, "F	Fuzzy Set Th	eory a	nd Its Applicati	ons", 4	th e	dition,	Springer	
Neth	erlands	,2015.									

	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	2	1	3	1	0	1	1
CO 3	3	3	3	2	3	1	1	1	1
CO 4	3	3	2	1	3	1	0	1	1
CO 5	3	3	2	1	3	1	0	1	1
TOTAL	15	15	12	7	15	5	2	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1
0 - No Relation, 1 – L	ow Relatio	on, 2- Me	edium Re	lation, 3	- High R	elation			1

COU	RSE N	AME		CODI	NG THE	CORY	L	Т	P	C
COU	RSE C	ODE		Ŋ	MA1E2		3	0	0	3
С	Р	A					L	Т	Р	H
3	0	0					3	0	0	3
PRER	EQUIS	ITE	Line	ar algebra				1		1
On su	ccessful	comple	etion o	f this course, th	ne studer	ts will be able to:				
			COU	RSE OUTCOM	IES		DOMA	IN	LE	VEL
CO 1	Util	ize the 1	maxim	um likelihood d	ecoding	rule to decode the	Cognit	ive	Δpr	lying
	rece	ived wo	ords				Cogint	IVC	7 1 PF	nymg
CO 2	Ide	ntify a g	generat	tor matrix and p	parity che	eck matrix for the	Cognit	ive	Apr	lying
002	give	en binary	y linea	r code			Cogint	IVC	7 1 PF	nying
CO 3	Exp	olain vai	rious b	ounds involved	in coding	g theory	Cognit	ive	Unders	standing
CO 4	Cor	struct	the ge	enerator polynoi	mial for	all binary	Cognit	ive	Apr	lying
004	cyc	ic codes	s of giv	ven length			Cogint	1.0	- PF	,1 j 111 G
CO 5	Exa	mine th	e deco	oding of narrow-	sense bin	ary BCH codes	Cognit	ive	Ana	lyzing
UNIT	1									9hours
Error d	letection	n, Corre	ction a	and decoding: C	ommuni	cation channels – N	Maximun	n likel	ihood d	ecoding -
Hamm	ing dist	ance – N	Vearest	neighborhood r	ninimum	distanced coding -	– Distanc	e of a	code	
UNIT	2									9hours
Linear	codes:	Linear	codes	– Self orthog	onal cod	es – Self dual co	odes – B	ases f	forlinear	codes -
Genera	tor mat	rix and	parity	check matrix -	Encodin	g with a linear coo	de – Dec	oding	of linea	r codes -
Syndro	ome dec	oding.								
UNIT	3									9 hours
Bound	s in coo	ling the	ory: T	he main coding	theory p	roblem – lower bo	ounds -Sp	phere of	covering	g bound -
Gilbert	Varsha	mov bo	ound –	Binary Hammir	ng codes	– q-ary Hamming o	codes – C	Golay	codes –	Singletor
bound	and MI	OS codes	s – Plo	tkin bound						
UNIT	4									9 hours
Cyclic	codes:	Definit	ions -	- Generator pol	ynomial	s – Generator mat	trix and	parity	check	matrix -
Decod	ing of C	yclic co	des.							
										9 hours
		codes:	BCH	codes – Parar	neters of	F BCH codes – D	ecoding	of BO	CHcode	s – Reed
UNIT Specia	l cyclic									
Specia	on code	s.								
Specia Solom		1	5	TUTORIAL	0	PRACTICAL	0	TO	TAL	45

1.San Ling and Chaoping Xing, Coding Theory: A First Course, Cambridge University Press, 2004.

Unit 1: Sections 2.1, 2.2, 2.3, 2.4, 2.5

Unit 2: Sections 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8

Unit 3: Sections 5.1, 5.2, 5.3, 5.4, 5.5,

Unit 4: Sections 7.1, 7.2, 7.3, 7.

Unit 5: Sections 8.1, 8.2

REFERENCES

- S. Lin &D. J. Costello, Jr., Error Control Coding: Fundamentals and Applications, Prentice-Hall, Inc., New Jersey, 1983.
- 2. Vera Pless, Introduction to the Theory of Error Correcting Codes, Wiley, NewYork, 1982.
- 3. E. R Berlekamp, Algebraic Coding Theory, Mc Graw-Hill, 1968.
- 4. H. Hill, A First Course in Coding Theory, OUP, 1986

COs VS POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	3	2	3	1	1	1	1
CO 2	3	3	3	2	3	1	1	1	1
CO 3	3	3	2	1	3	1	0	1	1
CO 4	3	3	3	2	3	1	1	1	1
CO 5	3	3	3	3	3	1	2	1	1
TOTAL	15	15	14	10	15	5	6	5	5
SCALED VALUE	3	3	3	2	3	1	2	1	1
0 - No Relation, 1 – L	ow Relatio	on, 2- Me	edium Re	elation, 3	- High R	elation			

 $1\textbf{-}5 {\rightarrow} 1, \textbf{6-}10 {\rightarrow} 2, 11\textbf{-}15 {\rightarrow} 3$

COU	RSE N.	AME		NEURAI	L NETV	VORKS	L	Т	P	C	
COU	RSE C	ODE		Y	MA1E3	3	3	0	0	3	
C	Р	Α					L	Т	Р	Н	
3	0	0					3	0	0	3	
PRERI	EQUIS	ITE	Linear	algebra							
On suc	cessful	comple	etion of	this course, th	e stude	nts will be able to:					
			COUR	SE OUTCOM	ES		DOMA	IN	LE	VEL	
CO 1	Sun	ımarize	e differe	nt neuron netw	ork mod	els	Cognit	ive	Unders	standing	
CO 2	Exp	lain Per	rceptron	Architectures	and Lea	rning Rules	Cognit	ive	Unders	standing	
CO 3		·		or finding the a associator	appropri	ate weight matrix	Cognit	ive	App	lying	
CO 4	Con netw		back	propagation a	lgorithm	n for the given	Cognit	ive	App	lying	
CO 5		•		d order Taylor tt the two minir		expansions for the	Cognit	ive	Applying		
UNIT 1	L		N	Neuron Model	and Net	twork Architecture	es			9 hours	
Mathen	natical	Neuron	n Mode	el- Network	Archited	ctures- Perceptron-	Hammin	g Ne	twork-	Hopfield	
Networ	k-Learı	ning Rul	les.								
UNIT 2	2			Percep	tron A	chitectures				9 hours	
Percept	ron Arc	chitectu	res and	Learning Rule	with Pro	oof of Convergence.	Supervi	sed H	ebbian I	earning	
Linear	Associa	tor.									
UNIT 3	3			Supervis	ed Hebl	bian Learning				9 hours	
The He	bb Ru	le-Pseuc	do inver	rse Rule-Variat	tions of	Hebbian Learning	-Back Pr	opaga	tion - N	Aultilaye	
Percept	ron										
UNIT 4	L I			Ba	ck Prop	agation			!	9 hours	
Back pr	opagat	ion Algo	orithm-(Convergence ar	nd Gene	ralization - Perform	ances Su	rfaces	and Op	timum	
Points-	Faylor	series.									
UNIT 5	5		Perfor	rmanceSurface	esandPe	erformanceOptimiz	zations		1	9 hours	
Directio	onal I	Derivativ	ves -	Minima-Neces	sary C	Conditions for O	ptimality	-Quad	ratic F	unctions-	
Perform	nance C	ptimiza	ations-St	teepest Descent	-Newto	n's Method-Conjug	ate Gradi	ent.			
LECT	URE	4	5	TUTORIAL	0	PRACTICAL	0	TO	TAL	45	
TEXT	BOOK		I					-	ł		
1.Marti	n T. H	agan, H	Ioward	B. Demuth an	d Mark	Beale, Neural Net	work De	sign,	Vikas P	ublishing	
	New D										

- James A. Freeman, David M. Skapura, Neural Networks Algorithms, Applications and Programming Techniques, Pearson Education, 2003.
- 2. Robert J. Schalkoff, Artificial Neural Network, McGraw-Hill International Edition, 1997.

COs VS POs

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	2	1	3	1	0	1	1
CO 3	3	3	3	2	3	1	1	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	13	8	15	5	3	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1
0 - No Relation, 1 – Lo	ow Relatio	on, 2- Me	edium Re	elation, 3	- High R	elation		l.	1

 $1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$

COL	JRSE I	NAME		ALC	GEBRA -	·II	L	Т	P	С
COU	JRSE	CODE		Y	MA201		4	1	0	5
С	Р	Α					L	Т	P	Н
5	0	0					4	1	0	5
PRER	EQUI	SITE	YMA	101				1	I	I
On su	ccessfi	l comple	etion of	f this course, th	e studen	ts will be able to:				
			COU	RSE OUTCOM	IES		DOMA	IN	L	EVEL
CO 1	Ex	plain the	conce	pts of prime ide	al and M	aximal ideal	Cognit	ive	Unde	rstanding
CO 2	Ex	plain the	conce	pts of splitting f	ields		Cognit	ive	Unde	rstanding
CO 3	Ex	plain the	e proof	solvability by ra	dicals		Cognit	ive	Unde	rstanding
CO 4	Ex	plain the	conce	pts of Galois's H	Extensior	IS	Cognit	ive	Unde	rstanding
CO 5		plain th eory	e proc	of of fundamer	ntal theo	rem of Galois's	Cognit	ive	Unde	rstanding
UNIT										15 hours
Prime	ideals	and Max	imal Id	eals, Irreducible	polynon	nials.				
UNIT	2									15 hours
Classie	cal For	mulas, Sj	olitting	Fields						
UNIT	3									15 hours
The G	alois G	roup, Ro	ots of I	Unity, Solvabilit	y by Rac	licals.				
UNIT	4									15 hours
Indepe	endence	e of Char	acters,	Galois Extensio	ns					
UNIT	5									15hours
The Fu	undame	ental theo	orem of	Galois theory, A	Applicati	ons, Galois Great	Theorem.			
LEC	TURE	6	0	TUTORIAL	15	PRACTICAL	0	TC	DTAL	75
TEXT	BOO	K								
1.Jose	ph Rot	man, Gal	ois The	eory, 2nd edition	n, Springe	er Verlag, 1990.				
UNIT	– I Pag	ges 31 - 4	3							
UNIT	– II Pa	ges 44 -5	8							
UNIT	– III P	ages 59 -	75							
UNIT	– IV P	ages 76-8	32							
UNIT	– V Pa	ges 83-9	5							
REFE	RENC	ES								
2. Se:	rgeLan	g. Algebi	ra-Revi	ardM.Foote,Abs sedthird edition ChapmanandHa	-Springe	ebra,2 nd Edition,Wi r–Verlag-2002.	ley Stude	entEdi	tion, 20	008.

COs VS POs									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	2	1	3	1	0	1	1
CO 3	3	3	2	1	3	1	0	1	1
CO 4	3	3	2	1	3	1	0	1	1
CO 5	3	3	2	1	3	1	0	1	1
TOTAL	15	15	15	5	15	5	0	5	5
SCALED VALUE	3	3	3	1	3	1	0	1	1
0 - No Relation, 1 – L	ow Relation	on, 2- Me	edium Re	elation, 3	- High R	elation	I	1	1
1-5→1, 6-10→2, 11-1	5→3								

COU	URSE N	IAME	REAL ANALYSIS - II	L	Т	Р	С
COU	URSE (CODE	YMA202	4	1	0	5
С	Р	Α		L	Т	Р	H
5	0	0		4	1	0	5
PRER	REQUI	SITE	Basic concepts of convergence and uniform conv	vergence	1	•	
On su	ccessfu	l comple	etion of this course, the students will be able to:				
			COURSE OUTCOMES	DOMA	IN	LE	VEL
CO 1		plain m iations	ean value theorem and functions of bounded	Cognit	ive	Unders	standing
CO 2		mpare egrals	mean value theorems for Riemann Stieltjes	Cognit	ive	App	lying
CO 3		plain u ferentiati	uniform convergence and integration and on	Cognit	ive	Unders	standing
CO 4	Ex	plain dir	ectional derivatives and total derivative	Cognit	ive	Unders	standing
CO 5		plain In orem	verse function theorem and Implicit function	Cognit	ive	Unders	standing
UNIT	1						15 hours
Differ	entiatio	n of sin	gle variable: Derivatives – The chain rule – loca	al extren	na – I	Rolle's t	heorem –
Mean	Value	Theorem	n – Taylor's formula – Derivatives of vector – v	valued fu	inctio	ns – Fur	nctions of
Bound	led var	iation a	nd rectifiable curves – Total variation – Fund	ctions of	f bou	nded va	riation –
Equiv	alence o	of paths -	- Change of parameter.				
UNIT	2						15 hours
exister fundar	nce -Fii mental	rst funda theorem	ntegral:Definition –linearpropertiesoftheintegral– mental theorem of Integral calculus -Mean Value of Integral calculus-Change of variable in a Ric emannintegrals.	Theorem	n for i	ntegrals	- Second
UNIT	3						15 hours
Seque	nce and	series o	f functions-Pointwise convergence-Uniform conv	ergence-	Unifo	ormconve	ergence
	tegratic	n–Unifo	rm convergence and Differentiation–Sufficient co	nditions	for un	iform	
and in		of a serie	8.				
	rgence						15 hours
							15 110015
conver UNIT Functi	4		variables – Directional derivative – Total derivative	e – Jacob	ian –	Chain ru	
conver UNIT Functi	4 ions of Theore		variables – Directional derivative –Total derivative lor's formula.	e – Jacob	ian —		

,1985.
,1985.

2. TomApostol,CalculusII,McGrawHill,1983.

COs VS POs

3 3 3 3	2 3 2	1 2 1	3 3 3	1 1 1	0 1 0	1 1 1	1 1 1
3	2	2 1	_	1 1	1 0	1 1	1
-	_	1	3	1	0	1	1
3	-	-		1	1		
5	2	1	3	1	0	1	1
3	2	1	3	1	0	1	1
15	11	6	15	5	1	5	5
3	2	2	3	1	1	1	1
	15 3	15 11 3 2	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	15 11 6 15 5	15 11 6 15 5 1 3 2 2 3 1 1	15 11 6 15 5 1 5 3 2 2 3 1 1 1

1 - 5 - 1, 6 - 10 - 2, 11 - 15 - 3

COUL	RSE NA	AME	PARTIAL DIFFERENTIAL EQUATIONS	L	Т	Р	С
COUI	RSE C	ODE	YMA203	4	1	0	5
С	Р	Α		L	Т	Р	Н
5	0	0		4	1	0	5
PRERE	QUIS	ITE	Knowledge in Undergraduate differential equation	ons			
On suce	essful	comple	tion of this course, the students will be able to:				
			COURSE OUTCOMES	DOMA	IN	LE	VEL
CO 1	Sum	ımarize	the first order partial differential equations	Cognit	ive	Unders	tanding
CO 2		•	different methods of Partial Differential f the Second Order	Cognit	ive	Anal	yzing
CO 3		lythe m ation	ethod of variable separable for solving Laplace	Cognit	ive	Арр	lying
CO 4		• 1	artial differential equations for obtaining general wave equation	Cognit	ive	Арр	lying
CO 5	Utili	ize Gree	en's Function for finding solutions of diffusion	Cognit	ive	Арр	lying
	equa	tion					
UNIT 1			Partial Differential Equations of the First O	rder		-	15 hours
			-				
		-	ations–OriginsofFirstOrderDifferentialEquations–	Cauchy's		lem for f	ïrst orde
equatior	ıs– Lin	ear Equ	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen	Cauchy's tial equa	tions	lem for f of the fir	irst orde st order -
equatior Cauchy ³	ıs– Lin 's metl	ear Equ	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder	Cauchy's tial equa	tions	lem for f of the fir	irst orde st order -
equatior Cauchy [:] given C	ns– Lin 's metl onditio	ear Equ	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder pi's method.	Cauchy's tial equa Equatio	tions	lem for f of the fir plutions	irst orde st order - satisfying
equatior Cauchy given C UNIT 2	ns– Lin 's metl onditio	ear Equ hod of n- Jacol	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder pi's method. Partial Differential Equations of the Second	Cauchy's tial equa Equatio Drder	tions ns–Sc	lem for f of the fir olutions	irst orde st order - satisfying 15 hours
equation Cauchy given C UNIT 2 The Ori – Equat	ns– Lin 's metl onditio gin of ions w	ear Equ hod of n- Jacol Second ith vari	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder pi's method.	Cauchy's tial equa Equatio Order nations w	tions ns–Sc vith co	lem for f of the fir olutions	irst orde st order - satisfying 15 hours efficient
equation Cauchy given C UNIT 2 The Ori – Equat	ns– Lin s metl onditio gin of ions w neareq	ear Equ hod of n- Jacol Second ith vari	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second Order Equations – Linear partial Differential Equ able coefficients – Separation of variables – The	Cauchy's tial equa Equatio Order nations w	tions ns–Sc vith co	lem for f of the fir olutions a constantco tegralTra	st order – satisfying 15 hours efficients
equation Cauchy given C UNIT 2 The Ori – Equat Non – li UNIT 3	ns– Lin s metl onditio gin of ions w neareq	ear Equ hod of n- Jacol Second ith vari uations	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second Order Equations – Linear partial Differential Equ able coefficients – Separation of variables – The of thesecond order.	Cauchy's tial equa Equatio Order nations w e method	tions ns–Sc /ith cc l ofInt	lem for f of the fir olutions a constantco tegralTra	irst orde st order - satisfying 15 hours efficients nsforms- 15 hours
equation Cauchy given C UNIT 2 The Ori – Equat Non – li UNIT 3 Element	as – Lin s methonditio gin of ions w neareq	ear Equ hod of n- Jacol Second ith vari uations	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second Order Equations – Linear partial Differential Equ able coefficients – Separation of variables – The of thesecond order. Laplace's Equation	Cauchy's tial equa Equatio Order nations w e method	tions ns–Sc /ith cc l ofInt	lem for f of the fir olutions a onstantco tegralTra	irst orde st order - satisfying 15 hours efficient nsforms- 15 hours ary value
equation Cauchy given C UNIT 2 The Ori – Equat Non – li UNIT 3 Element problem	as – Lin s methoditio gin of ions w neareq ary so as – Se	ear Equ hod of n- Jacol Second ith vari uations lutions	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferent characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second of Order Equations – Linear partial Differential Equal able coefficients – Separation of variables – The of thesecond order. Laplace's Equation of Laplace equation – Families of Equipotential	Cauchy's tial equa Equatio Order nations w e method ial Surfa ems – So	tions ns–Sc /ith cc l ofInt ices – eparat	lem for f of the fir olutions a onstantco tegralTra - Bounda ion ofVa	irst orde st order - satisfying 15 hours efficient nsforms- 15 hours ary value
equation Cauchy given C UNIT 2 The Ori – Equat Non – li UNIT 3 Element problem Problem	as – Lin s methoditio gin of ions w neareq ary so as – Se as with	ear Equ hod of n- Jacol Second ith vari uations lutions	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second (Order Equations – Linear partial Differential Equ able coefficients – Separation of variables – The of thesecond order. Laplace's Equation of Laplace equation – Families of Equipotentian n of variables – Surface Boundary Value Proble	Cauchy's tial equa Equatio Order nations w e method ial Surfa ems – So	tions ns–Sc /ith cc l ofInt ices – eparat	lem for f of the fir olutions a onstantco tegralTra - Bounda ion ofVa	irst order st order - satisfying 15 hours efficients nsforms- 15 hours ary value
equation Cauchy given C UNIT 2 The Ori – Equat Non – li UNIT 3 Element problem Problem UNIT 4	as – Lin 's methoditio gin of ions w neareq ary so as – Se as with	ear Equ hod of n- Jacol Second ith vari uations lutions eparation Axial S	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second (Order Equations – Linear partial Differential Equ able coefficients – Separation of variables – The of thesecond order. Laplace's Equation of Laplace equation – Families of Equipotentian n of variables – Surface Boundary Value Proble ymmetry – The Theory of Green's Function for Laplace	Cauchy's tial equa Equatio Order nations w e method ial Surfa ems – So aplace Ed	tions (ns–Sc /ith cc l ofInt cces – eparat quatio	lem for f of the fir olutions a onstantco tegralTra - Bounda ion ofVa on.	irst orde st order - satisfying 15 hours efficient nsforms- 15 hours ary value uriables - 15 hours
equation Cauchy given C UNIT 2 The Ori – Equat Non – li UNIT 3 Element problem Problem UNIT 4 TheOcc	as – Lin 's methoditio gin of ions w neareq ary so as – Se as with	ear Equ hod of n- Jacol Second ith vari uations lutions eparation Axial S	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second of Order Equations – Linear partial Differential Equ able coefficients – Separation of variables – The of thesecond order. Laplace's Equation of Laplace equation – Families of Equipotentian n of variables – Surface Boundary Value Proble ymmetry – The Theory of Green's Function for La The Wave Equation	Cauchy's tial equa Equatio Order nations w e method ial Surfa ems – Se aplace Ed	tions (ns–Sc /ith cc l ofInt cces – eparat quatio	lem for f of the fir olutions a onstantco tegralTra - Bounda ion ofVa on.	irst orde st order - satisfying 15 hours efficient nsforms- 15 hours ary value ariables - 15 hours Wave
equation Cauchy given C UNIT 2 The Ori – Equat Non – li UNIT 3 Element problem Problem UNIT 4 TheOcc equation	ns – Lin 's mether ondition gin of ions w neareq ary so as – Se as with urrence ns – V	ear Equ hod of n- Jacol Second ith vari uations lutions eparation Axial S eoftheway	ations–OriginsofFirstOrderDifferentialEquations– ations of the first order– Nonlinear partialdifferen characteristics – Compatiblesystemof Firstorder bi's method. Partial Differential Equations of the Second (Order Equations – Linear partial Differential Equ able coefficients – Separation of variables – The of thesecond order. Laplace's Equation of Laplace equation – Families of Equipotentian of variables – Surface Boundary Value Proble ymmetry – The Theory of Green's Function for La The Wave Equation aveequationinPhysics–ElementarySolutionsoftheC	Cauchy's tial equa Equatio Order nations w e method ial Surfa ems – Se aplace Ed	tions (ns–Sc /ith cc l ofInt cces – eparat quatio	lem for f of the fir olutions a onstantco tegralTra - Bounda ion ofVa on.	irst order st order - satisfying 15 hours efficients nsforms- 15 hours ary value ariables - 15 hours Wave

Elementary So Transforms – T			juation -	- Separation of va	ariables -	– The use of	f Integral
LECTURE	60	TUTORIAL	15	PRACTICAL	0	TOTAL	75
TEXT BOOK							
New Delhi, 198 REFERENCE							
1. M. D. Rai 3 2001.	Singhania, A	Advanced Differe	ential Equ	uations, S. Chand	and Com	pany Ltd., Ne	ew Delhi
	Rao, Introc Delhi, 2006.		1 Differe	ential Equations, S	econd ed	lition, Prentic	e-Hall o

3. J. N. Sharma and K. Singh, Partial Differential Equations for Engineers and Scientists, Narosa Publishing House, 2001.

COs	VS POs
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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	3	3	3	1	2	1	1
CO 3	3	3	3	2	3	1	1	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	14	10	15	5	5	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1

0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation

 $1\textbf{-}5 {\rightarrow} 1, 6\textbf{-}10 {\rightarrow} 2, 11\textbf{-}15 {\rightarrow} 3$

COU	RSE N	AME		CLASSIC	CAL DYN	IAMICS	L	T	P	С		
COU	RSE C	ODE		Ŋ	/MA204		4	1	0	5		
С	Р	Α					L	T	Р	Н		
5	0	0					4	1	0	5		
PRER	EQUIS	SITE	Trigo	phometry and St	atics							
On suc	ccessfu	comple	etion o	f this course, th	e studen	ts will be able to:						
			COU	RSE OUTCOM	IES		DOMA	IN	LE	VEL		
CO 1	Exp	olain the	mecha	anical system, er	nergy and	l momentum.	Cognit	ive	Unders	standing		
CO 2	Exp	olain Lag	grange	's equation and	integrals	of motion.	Cognit	ive	Unders	standing		
CO 3	CO 3 ExplainRayleigh's dissipation function and impulsive Motion Understanding											
CO 4	Exp	olainHar	milton's	s principle and	lamilton'	s equations	Cognit	ive	Unders	standing		
CO 5	_	olainHar obi's equ		s Principal Fun	ction, T	ne Hamilton and	Cognit	ive	Unders	standing		
UNIT	1									15 hours		
Introdu	ictory c	oncepts	: The r	nechanical system	em - Gen	eralized Coordina	tes - con	strain	ts - virtu	al work -		
Energy	and m	omentun	n.									
UNIT	2									15 hours		
Lagran	ige's eq	uation: I	Derivat	ion and example	es - Integ	rals of the Motion	- Small o	scilla	tions.			
UNIT	3									15 hours		
Special	l Appli	cations	of Lag	grange's Equation	ons: Ray	leigh's dissipation	function	n - in	npulsive	motion -		
Gyrosc	copic sy	stems - Y	velocit	y dependent pot	entials.							
UNIT	4									15 hours		
Hamilt	on's eq	uations:	Hamil	ton's principle -	Hamilto	n's equations - Ot	her varia	tional	principle	es - phase		
space.												
UNIT	5									15hours		
Hamilt	on - J	acobi T	heory:	Hamilton's Pr	incipal F	Function – The H	Iamilton	– Ja	cobi's e	quation -		
Separa	bility.						•					
LEC	ΓURE	6	50	TUTORIAL	15	PRACTICAL	0	TO	OTAL	75		
	BOOF											
				•		Pvt. Ltd., New De				-		
				-		1 to 2.4 UNIT – I	-		Sections	3.1 to 3.4		
		1	Sectio	ns 4.1 to 4.4 UN	NIT – V C	Chapter 5: Sections	s 5.1 to 5.	.3				
REFE	RENC	ES										

1.H. Goldstein, Classical Mechanics, (2nd Edition), Narosa Publishing House, New Delhi.

 Narayan Chandra Rana&PromodSharad Chandra Joag, Classical Mechanics, Tata McGrawHill, 1991.

COs VS POs									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	2	1	3	1	0	1	1
CO 3	3	3	2	1	3	1	0	1	1
CO 4	3	3	2	1	3	1	0	1	1
CO 5	3	3	2	1	3	1	0	1	1
TOTAL	15	15	10	5	15	5	0	5	5
SCALED VALUE	3	3	2	1	3	1	0	1	1
0 - No Relation, 1 – L	ow Relatio	on, 2- Me	edium Re	elation, 3	- High R	elation	•	•	
1-5→1, 6-10→2, 11-1	5→3								

COU	RSE N	AME	COMPUTER PROGRAMMING (C++ Theory and Lab)	L	Т	Р	С
COU	RSE C	CODE	YMA205	3	0	2	5
C	Р	A		L	T	P	Н
5	0	0		3	0	2	5
PRER	EQUIS	SITE					
On suc	ccessfu	l comple	etion of this course, the students will be able to:				
			COURSE OUTCOMES	DOMA	AIN	LEV	VEL
CO 1	Ex	olain C _l	programming fundamentals	Cognit	tive	Unders	tanding
CO 2	Ap	ply struc	ture and union for various functions	Cognit	tive	App	lying
CO 3	Exp	olain ad	vanced concept of pointers and files	Cognit	tive	Unders	tanding
CO 4	Exj	olainOb	ject oriented technologies	Cognit	tive	Unders	tanding
CO 5	Exp	olain Al	gorithms Using Functions and Objects	Cognit	tive	Unders	tanding
UNIT	1 IN7	FRODU	CTION TO C LANGUAGE			1	5 hours
Function Array of Lab: 4. Prog 5.Program refer 6.Program	- dyr ons - U of Struc gram us ram to i rence ram to i	amic an ser defi etures – s ing 2D a impleme	nt calling the function through call by value metho nt Structures	rsion - S	Structur	String res and	Unions -
UNIT	3 PO	INTER	S AND FILE MANAGEMENT			1	5 hours
Manag Lab: 7.Progr 8.Progr 9.Progr UNIT	ement i ram to i ram to i ram to i 4 IN 7	n C – D impleme impleme impleme	Accessing a variable, character strings, pointers ynamic Memory allocation – Linked Lists – Prepr nt dynamic memory allocation nt pointer to function nt an array of pointers CTION TO C++	ocessors		1	5 hours
Membe	ers-Arrauctor F	ays-Poin	Classes and Objects-Friend Functions-Friend ters-References-Dynamic Allocation- Funct s-Copy Constructors-Default Argument-Operator	ion O	verload	ding-Ove	erloading

	nstrate Inline	Functions								
11.Impler	nent Class an	d Subclass	5							
	nstrate Const			ſS.						
UNIT 5	ADDITION	AL FEAT	TURES							15 hours
Inheritanc	e-Base Class	s-Access	Control-V	irtual Fu	inctions-	Pure Vir	tual Fur	ctions-	Template	es-Generic
	-Applying Ge									
	view-Contain									
Lab:				1 0		U U			C	
13. Imple	ment Virtual	Function								
-	ms to implem		-	xception	handling	5				
	m to implem									
LECTU	RE 60) TU	TORIAL	. 15	PRA	CTICAI	0	Т	OTAL	75
TEXT B	DOKS									
1. E.	Balagurusam	y, Progran	nming in A	NSIC 7	Tata Mc(Graw Hill	2008			
				\mathbf{m} or \mathbf{C} ,		Jiaw IIII	, 2000			
	rbert Schildt	, C++ The	-					on, 201	4	
2. He		, C++ The	-					on, 201	4	
2. He REFERE	NCES		Complete	Referen	ce, Tata I	McGrawl		on, 201	4	
2. Ho REFERE 1. Do	NCES	el, C How	Complete to Program	n, Addis	ce, Tata	McGrawl	Hill Editi			omnany: 2
2. Ho REFERE 1. Do 2. K.	NCES itel and Deito N. King,C I	el, C How	Complete to Program	n, Addis	ce, Tata	McGrawl	Hill Editi			ompany; 2
2.HoREFERE1.2.K.ed	NCES itel and Deito N. King,C I ition,2008	el, C How Programmi	Complete to Program	m, Addis	ce, Tata on Wesle proach, 2	McGrawl ey, 2011 2nd Editi	Hill Editi			ompany; 2
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2. Ho REFERE 1. Do 2. Ko ed 3. Ro	NCES itel and Deite N. King,C I ition,2008 bert Lafore, 6	el, C How Programmi	Complete to Program	m, Addis	ce, Tata on Wesle proach, 2	McGrawl ey, 2011 2nd Editi	Hill Editi			
2. Ho REFERE 1. Do 2. Ko ed 3. Ro	NCES itel and Deite N. King,C I ition,2008 bert Lafore, 6	el, C How Programmi OOP in Tu	Complete to Program ing: A Mo urbo C++,	m, Addis odern Ap Galgotia	ce, Tata 1 on Wesle proach, 2 Publicati	McGrawl ey, 2011 2nd Editi ions, 200	Hill Editi on, W. V	W. Nort	ton & Co	

$1 ext{-}5 ext{-}1, 6 ext{-}10 ext{-}2, 11 ext{-}15 ext{-}3$	

CO 3

CO 4

CO 5

TOTAL

SCALED VALUE

0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation

co-ordinates. Co CO 2 Understand the concepts and equations of fluid dynamics Cognitive Understanding Analyze and understand the concepts of the force experienced by a two-dimensional fixed body in a steady irrotational flow Cognitive Understanding CO 3 experienced by a two-dimensional fixed body in a steady irrotational flow Cognitive Understanding CO 4 Analyze the approximate solutions of the Navier – Stokes equation. Cognitive Applying CO 5 Apply the appropriate method to solve integral equation of boundary layer, Blasius equation and its series solution Cognitive Applying UNIT 1 Bernoulli's Equation and Equations of Motion 9 hours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of continuity – Boundar inviscid fluid. Shours UNIT 2 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation	COUR	SE NAME		FLUID DYNAMICS	L	T	Р	С
3 0 0 3 0 0 3 PREREQUISITE Trigonometry On successful completion of this course, the students will be able to: COURSE OUTCOMES DOMAIN LEVEL Courses of velocity, density and curvilinear coordinates. Cognitive coordinates. Cognitive coordinates. Cognitive Understanding Analyze and understand the concepts of the force cognitive understanding experienced by a two-dimensional fixed body in a steady irrotational flow Understanding Analyze CO 4 Analyze the approximate solutions of the Navier – Stokes Cognitive dequation. Applying CO 5 Apply the appropriate method to solve integral equation of continuity – Boundar layer, Blasius equation and its series solution Onderstand Filaments – Flui Moundary layer, Blasius equation and Equations of Motion 9 hours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Boundary layer, Blasius equation of Kotion (Contd) 9 hours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Boundary layer, Blasius equation of Motion	COUR	SE CODE		YMA2E1	3	0	0	3
PREREQUISITE Trigonometry On successful completion of this course, the students will be able to: COURSE OUTCOMES DOMAIN LEVEL CO 1 Recall the basic concepts of velocity, density and curvilinear cognitive Remembering CO 2 Understand the concepts and equations of fluid dynamics Cognitive Remembering CO 3 experienced by a two-dimensional fixed body in a steady irrotational flow Understanding Analyze Analyze Co 4 Analyze the approximate solutions of the Navier – Stokes Cognitive cognitive Applying CO 5 Apply the appropriate method to solve integral equation of boundary layer, Blasius equation and its series solution boundary layer, Blasius equation and its series solution boundary layer. Phours Phours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of continuity – Boundar conditions – Kinematical and physical – Rate of change of linear momentum – Equation of a inviscid fluid. Phours UNIT 2 Equations of Motion (Contd) 9 hours UNIT 2 Equations of Motion (Contd) 9 hours Recall the basic concepts of the force – Complex Potential – basic singu	С	P A			L	Т	Р	Н
On successful completion of this course, the students will be able to: DOMAIN LEVEL CO1 Recall the basic concepts of velocity, density and curvilinear co-ordinates. Cognitive Remembering CO2 Understand the concepts and equations of fluid dynamics Cognitive Understanding understand the concepts of the force experienced by a two-dimensional fixed body in a steady irrotational flow Cognitive Understanding Analyze CO4 Analyze the approximate solutions of the Navier – Stokes equation. Cognitive Applying CO5 Apply the appropriate method to solve integral equation of boundary layer, Blasius equation and its series solution Cognitive Applying UNIT 1 Bernoulli's Equation and Equations of Motion 9 hours Phours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of motion of a inviscid fluid. 9 hours UNIT 2 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoully's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source –	3	0 0			3	0	0	3
COURSE OUTCOMES DOMAIN LEVEL CO 1 Recall the basic concepts of velocity, density and curvilinear co-ordinates. Cognitive Remembering CO 2 Understand the concepts and equations of fluid dynamics Cognitive Understanding CO 3 Analyze and understand the concepts of the force experienced by a two-dimensional fixed body in a steady irrotational flow Cognitive Understanding Analyze CO 4 Analyze the approximate solutions of the Navier – Stokes equation. Cognitive equation. Applying CO 5 Apply the appropriate method to solve integral equation of boundary layer, Blasius equation and its series solution Cognitive boundary layer, Blasius equation and Equations of Motion 9 hours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of motion of a inviscid fluid. 9 hours UNIT 1 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. 9 hours UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source	PRERE	QUISITE		Trigonometry				
CO 1 Recall the basic concepts of velocity, density and curvilinear co-ordinates. Cognitive conditional fixed concepts and equations of fluid dynamics Cognitive cognitive Remembering CO 2 Understand the concepts and equations of fluid dynamics Cognitive cognitive Understanding CO 3 Analyze and understand the concepts of the force experienced by a two-dimensional fixed body in a steady irrotational flow Cognitive Understanding Analyze CO 4 Analyze the approximate solutions of the Navier – Stokes equation. Cognitive equation. Applying CO 5 Apply the appropriate method to solve integral equation of boundary layer, Blasius equation and Equations of Motion 9 hours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of continuity – Boundar conditions – Kinematical and physical – Rate of change of linear momentum – Equation of motion of a inviscid fluid. 9 hours UNIT 2 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. 9 hours UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – do	On succ	essful com	plet	ion of this course, the students will be able to:				
CO 1 Co-ordinates. Cognitive Remembering CO 2 Understand the concepts and equations of fluid dynamics Cognitive Understanding CO 3 Analyze and understand the concepts of the force experienced by a two-dimensional fixed body in a steady irrotational flow Understanding CO 4 Analyze the approximate solutions of the Navier – Stokes equation. Cognitive Applying CO 5 Apply the appropriate method to solve integral equation of boundary layer, Blasius equation and its series solution Cognitive Applying UNIT 1 Bernoulli's Equation and Equations of Motion 9 hours Phours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of motion of a inviscid fluid. 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. 9 hours UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation - Blasius Theorem – Lift force. (Magnus effect) 9 hours UNIT 4 Dynamics of Real Fluids 9				COURSE OUTCOMES	DOMA	IN	LF	EVEL
Analyze and understand the concepts of the force experienced by a two-dimensional fixed body in a steady irrotational flow Cognitive understanding Analyze CO 4 Analyze the approximate solutions of the Navier – Stokes equation. Cognitive equation. Applying CO 5 Apply the appropriate method to solve integral equation of boundary layer, Blasius equation and its series solution Cognitive equation. Applying UNIT 1 Bernoulli's Equation and Equations of Motion 9 hours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of motion of a inviscid fluid. UNIT 2 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation Blasius Theorem – Lift force. (Magnus effect) 9 hours UNIT 4 Dynamics of Real Fluids 9 hours Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.	CO 1				Cognit	ive	Reme	embering
CO 3 experienced by a two-dimensional fixed body in a steady irrotational flow Understanding Analyze CO 4 Analyze the approximate solutions of the Navier – Stokes cognitive equation. Cognitive optimized approximate solutions of the Navier – Stokes cognitive boundary layer, Blasius equation and its series solution Cognitive optimized approximate solutions of the Navier – Stokes cognitive boundary layer, Blasius equation and its series solution Cognitive optimized approximate solution of boundary layer, Blasius equation and the series solution Cognitive optimized approximate solution of boundary layer, Blasius equation and the series solution Phours UNIT 1 Bernoulli's Equation and Equations of Motion 9 hours Phours Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of continuity – Boundar conditions – Kinematical and physical – Rate of change of linear momentum – Equation of motion of a inviscid fluid. 9 hours UNIT 2 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. UNIT 3 UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities - source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder wit	CO 2	Understa	nd t	he concepts and equations of fluid dynamics	Cognit	ive	Under	rstanding
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CO 5 If the first first first for the fi	CO 4	-	the	approximate solutions of the Navier - Stokes	Cognit	ive	Ap	plying
Introductory Notions – Velocity – Stream Lines and Path Lines – Stream Tubes and Filaments – Flui Body – Density – Pressure. Differentiation with respect to the time – Equation of continuity – Boundar conditions – Kinematical and physical – Rate of change of linear momentum – Equation of motion of a inviscid fluid. UNIT 2 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. 9 hours UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion 9 hours Source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation – Blasius Theorem – Lift force. (Magnus effect) 9 hours UNIT 4 Dynamics of Real Fluids 9 hours Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.	CO 5		-		Cognit	ive	Ap	plying
Body – Density – Pressure. Differentiation with respect to the time – Equation of continuity – Boundar conditions – Kinematical and physical – Rate of change of linear momentum – Equation of motion of a inviscid fluid. UNIT 2 Equations of Motion (Contd) 9 hours Euler's momentum Theorem – Conservative forces – Bernoulli's theorem in steady motion – energ equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. 9 hours UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation – Blasius Theorem – Lift force. (Magnus effect) 9 hours UNIT 4 Dynamics of Real Fluids 9 hours Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.	UNIT 1			Bernoulli's Equation and Equations of Mot	tion			9 hours
equation for inviscid fluid – circulation – Kelvin's theorem – vortex motion – Helmholtzequation. 9 hours UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation Blasius Theorem – Lift force. (Magnus effect) UNIT 4 Dynamics of Real Fluids 9 hours Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.	Body – I conditior inviscid f	Density – P 1s – Kinem	ress	sure. Differentiation with respect to the time – Eq al and physical – Rate of change of linear momen	uation of	f con	tinuity –	Boundary
UNIT 3 Two-Dimensional Motion 9 hours Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation Blasius Theorem – Lift force. (Magnus effect) 9 hours UNIT 4 Dynamics of Real Fluids 9 hours Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes. –	Euler's r	nomentum	Th	eorem - Conservative forces - Bernoulli's theo	orem in s	steady	y motior	n – energ
Two-Dimensional Motion – Two Dimensional Functions – Complex Potential – basic singularities source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation Blasius Theorem – Lift force. (Magnus effect) UNIT 4 Dynamics of Real Fluids 9 hours Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.	equation	for inviscio	l flu	uid – circulation – Kelvin's theorem – vortex mot	ion – He	lmho	ltzequati	ion.
source – sink – Vortex – doublet – Circle theorem. Flow past a circular cylinder with circulation Blasius Theorem – Lift force. (Magnus effect) UNIT 4 Dynamics of Real Fluids 9 hours Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.	UNIT 3			Two-Dimensional Motion				9 hours
Viscous flows – Navier-Stokes equations – Vorticity and circulation in a viscous fluid – Steady flow through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.	Two-Din	sink – Vo	rte	x – doublet – Circle theorem. Flow past a circ			C	
through an arbitrary cylinder under pressure – Steady Couette flow between cylinders in relative motion – Steady flow between parallel planes.		Theorem – I		Dynamics of Real Fluids				9 hours
UNIT 5The Laminar Boundary Layer in Incompressible Flow9hours	Blasius T	Theorem –]		Dynamics of Kear Fluids		c11	– Steady	y flow
	Blasius T UNIT 4 Viscous : through a	flows – Na an arbitrary	cyl	r-Stokes equations – Vorticity and circulation in a linder under pressure – Steady Couette flow between				

Kinetic energy thickness - integral equation of boundary layer - flow parallel to semi-infinite flat pla	ıte –
Blasius equation and its solution in series.	

LECTURE	45	TUTORIAL	0	PRACTICAL	0	TOTAL	45
TEXT BOOKS	5						

- Units I and II: L. M. Milne Thomson, Theoretical Hydro Dynamics, Macmillan Company, 5th Edition (1968). Chapter I: Sections 1.0 – 1.3., 3.10-3.41 (omit 3.32) Chapter III: Sections 3.42 – 3.53 (omit 3.44)
- Units III, IV and V: Modern Fluid Dynamics Volume I, N. Curle and H. J. Davies, D. Van Nostrand Company Limited, London, 1968. Chapter III: Sections 3.1 – 3.7.5 (omit 3.3.4, 3.4, 3.5.2,3.6) Chapter V: Sections 5.2.1–5.3.3 Chapter VI: Sections 6.1 – 6.3.1 (omit 6.2.2., 6.2.5)

- 1. F. Chorlton, Textbook of Fluid Dynamics, CBS Publishers, New Delhi, 2004.
- A. J. Chorin and A. Marsden, A Mathematical Introduction to Fluid Dynamics, SpringerVerlag, New York, 1993.

E – Resources (MOOC, SWAYAM, NPTEL, Websites etc)

1. https://nptel.ac.in/courses/112/106/112106200/

COs VS POs									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	2	1	3	1	0	1	1
CO 3	3	3	2	1	3	1	0	1	1
CO 4	3	3	2	1	3	1	0	1	1
CO 5	3	3	2	1	3	1	0	1	1
TOTAL	15	15	10	5	15	5	0	5	5
SCALED VALUE	3	3	2	1	3	1	0	1	1

0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation

 $1 \text{-} 5 \rightarrow 1, 6 \text{-} 10 \rightarrow 2, 11 \text{-} 15 \rightarrow 3$

COU	RSE N	AME	COMBINATORICS	L	Т	Р	C	
	RSE C		YMA2E2	3	0	0		
C00	RSE C P				T T		H	
C 3		а 0			0	0	3	
	EQUIS		Basics of sets	5	Ū	v	0	
			tion of this course, the students will be able to:					
		compie	COURSE OUTCOMES	DOMA	IN	LE	VEL	
	Exp	lain the	distributions of distinct objects and non-distinct					
CO 1	obje			Cognit	ive	Unders	tanding	
CO 2		•	rings, combinations, distributions, and partitions	Cognit	ive	App	lying	
	Solv	e line	ear recurrence relations by recognizing					
CO 3		-	y, linearity, constant coefficients, degree, and c equation	Cognit	ive	App	lying	
	Identify the number of permutations with forbidden							
CO 4		-	ng rook polynomials	Cognit	ive	App	lying	
CO 5	Арр	oly Polya	's theorem for finding number of permutations	Cognit	ive	Ann	lying	
000	of g	iven obj	ects	cogint		· PP	- JB	
UNIT	1		Permutations and combinations			9) hours	
Distrib	utions o	of disting	t objects – Distributions of non-distinct objects –	Stirling's	s form	nula.		
UNIT	2		Generating functions			9) hours	
Genera	ting fur	nction fo	or combinations – Enumerators for permutations	distribut	tions	of disting	et object	
into no	n distin	ct cells -	- partitions of integers – Ferrers graphs – Element	ary relati	ons.			
UNIT	3		Recurrence relation			9	hours	
Linear	recurren	nce relat	ions with constant coefficients- solutions by the te	echnique	of ge	enerating	functions	
– A spe	ecial cla	ss of no	nlinear difference equations – Recurrence relation	s with tw	vo ind	ices.		
UNIT	4		The principle of inclusion and exclusion	1		9) hours	
Genera	l form	ula – I	Permutations with restriction on relative posit	ions – I	Deran	gements	– Rool	
polyno	mials –	permuta	tions with forbidden positions.					
UNIT	5		Polya's theory of counting			9) hours	
Equiva	lence cl	asses ur	ider a permutation group – Burnside theorem – Ed	quivalenc	e cla	sses of fu	nctions -	
Weight	and	inventor	ies of functions - Polya's fundamental theore	m – Ge	nerali	zation of	f Polya'	
theorer	n							

LECTURE	45	TUTORIAL	0	PRACTIC	AL	0	TOTAL	45
TEXT BOOKS	5							-
1. Cameron, I	P.J. (1998)	Combinatorics:	Topics,	Techniques,	Algori	ithms.	Cambridge:	Cambridge

- University Press.
- Liu, C.L., Eddberg, M. (1968).Solution to problems in Introduction to Combinatorial Mathematics. New York: McGraw-Hill Book & Co.

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COs VS POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	2	1	3	1	0	1	1
CO 2	3	3	3	2	3	1	1	1	1
CO 3	3	3	3	2	3	1	1	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	14	9	15	5	4	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1
0 - No Relation, 1 – L	ow Relation	on, 2- Me	edium Re	elation, 3	- High R	elation	1		ı
1-5→1, 6-10→2, 11-1	5→3								

COUI	RSE NA	AME		CRYP	TOGRA	РНҮ	L	Т	P	C
COU	RSE C	ODE		Y	MA2E3		3	0	0	3
С	Р	Α					L	Т	Р	Н
3	0	0					3	0	0	3
PRERE	EQUIS	ITE	Basic	c concepts of nu	mber the	ory				
On suce	cessful	comple	tion o	f this course, th	e studen	ts will be able to:				
			COU	RSE OUTCOM	IES		DOMA	IN	LE	VEL
CO 1		•		t and properties to find the solu		ular arithmetic in	Cognit	ive	Apj	olying
CO 2				rho method for problem	solving	the elliptic curve	Cognit	ive	Apj	olying
CO 3			-	operties of fir finite fields	nite field	ls for factoring	Cognit	ive	Арј	olying
CO 4	Dem ciphe		te the	concepts of s	stream ci	phers and block	Cognit	ive	Under	standing
CO 5		•		epts of public ke tography	ey crypto	graphy, RSA and	Cognit	ive	Apj	olying
UNIT 1										9 hours
Introduc	ction –	- Encry	ption	and Secrecy -	- The c	bjective of Cryp	tography	- N	lumber	Theory –
Introduc	ction –	Modula	r Arith	nmetic.						
UNIT 2										9 hours
U U		zation p	roblen	n – Pollard's rh	o factori	ng – Elliptic curve	e factorir	ng – I	Discrete	logarithm
problem	-									
UNIT 3										9 hours
		-	-	es – Arithmetic	ot polyr	omials –Factoring	polynon	mals (over fini	te fields –
Square f		torizatio	on.							0.1
UNIT 4			tion	Ctus our sinh our	Dlask	Cichara DEC				9 hours
		encryp	tion –	Stream ciphers	- BIOCK (_1pners – DES.				Ohanna
UNIT 5		atograpi		oncents of muhi	ie kov er	yptography – Modu	lor onith	motio	DCA	9hours
				oncepts of public ptography.	ic key cr	ypiography – wiodi	ulai afitfi	metic	- ASA -	- Discrete
LECT		4		TUTORIAL	0	PRACTICAL	0	Т	OTAL	45
TEXT										
			ıt Knel	bl, Introduction	to Crypto	ography, Springer V	Verlag, 20	002.		
					71		0,			

- 2. Alfred J. Menezes, Paul C. Van Oorschot, Scott A. Vanstone, Handbook of Applied Cryptography, CRC Press, 2000.
- 3. William Stallings, Cryptography and Network Security, Prentice Hall of India, 2000.

- 1. Pachghare V.K., Cryptography and Information Security, PHI Learning Pvt. Ltd., New Delhi, 2009
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COs VS POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	3	3	2	3	1	1	1	1
CO 2	3	3	3	2	3	1	1	1	1
CO 3	3	3	3	2	3	1	1	1	1
CO 4	3	3	2	1	3	1	0	1	1
CO 5	3	3	3	2	3	1	1	1	1
TOTAL	15	15	14	9	15	5	4	5	5
SCALED VALUE	3	3	3	2	3	1	1	1	1
0 - No Relation, 1 – L	ow Relation	on, 2- Me	edium Re	elation, 3	- High R	elation	1		1
1-5→1, 6-10→2, 11-15	5→3								

COU	RSECO	DF	COURSETITLE		Т	Т	Р	C
	MA301		FIELD THEORY		<u> </u>	1	<u> </u>	4
C	P		FIELD THEORY		3	1	U	
		Α				T		
4	0	0			L	Т	Р	Н
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PRERF	EQUISI	TE: A	lgebra					
COUR	SE OUI	CON	IES:					
Course	outcom	les:			main		Leve	l
			xplain Extension fields – Finite Extension –	Cog	gnitive		Remembe	
	-		nsion - Transcendence of e.				Inderstan	
			xplain Roots of Polynomials Remainder	Cog	gnitive		Remembe	0
r	Theorem	ı – Sp	litting field - More about roots.			t	Jnderstan	ding
			xplain Elements of Galois Theory- Fixed	Cog	gnitive		Remembe	
			extension- Fundamental Theorem.				Inderstan	-
			xplain Solvability by radicals – Solvable	Cog	gnitive		Remembe	
			s group over the rational.	0	•.•		Inderstan	U
			xplain Finite fields - Wedderburn's	Cog	gnitive		Remembe	-
	frobeniu		ite division rings – A Theorem of				Inderstan	ding
UNIT I		18.						12
		- Fin	ite Extension – Algebraic Extension - Transcen	dence	ofe			12
UNIT I		, 111		uenee	01 0.			12
		mials	- Remainder Theorem – Splitting field - More a	about	roots			
UNITI					10000			12
Elemen	ts of Ga	lois Tl	neory- Fixed field – Normal extension- Fundam	ental	Theor	em.		
UNIT I								12
		adical	s – Solvable group – Galois group over the ratio	onal.				
UNIT V								12
Finite fi	elds - W	/edder	burn's theorem on finite division rings – A Theorem	orem	of Fro	beni	us.	
	CTURE		TORIAL					OTAL
45	0.017	15					6	0
TEXTI		1)(T)						
-			ics in Algebra", Willey Eastern, 1975.					
REFER				1.1.	· ,	T1 '	1 17 11 11	2012
			'A First Course in Abstract Algebra", Narosa P			Ihir	d Edition	,2013
2. P. N	vi. Cohn	, Basi	c Algebra", Springers Publications, Second Edi	uon,2	2003.			

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	3	2			1	1	1	1	1
CO2	3	2			1	1	1	1	1
CO3	3	2			1	1	1	1	1
CO4	3	2			1	1	1	1	1
CO5	3	2			1	1	1	1	1
Total	15	10			5	5	5	5	5
Scaled Value	3	2			1	1	1	1	1

1-5→1, 6-10→2, 11-15→3 0 - No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation

	URSEC		COURSENAME		L	Τ	Р	С
	YMA30)2	TOPOLOGY		4	1	0	5
<u>C</u>	P	A			.	T	n	
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		TTE.	Analysis		4	1	0	5
	-		Analysis					
	RSE OU se outco		MES:	Dom	ain	Leve	1	
			xplain Topological Spaces		nitive		emberir	a
COI	Denne	anu r	xpiam Topological Spaces	Cogi	nuve		erstandi	
CO2:	Define	and E	xplain Continuous Functions	Cogr	nitive		emberir erstandi	0
<u>CO3.</u>	Dofino	and F	xplain Connectedness	Cogr	itive		emberir	0
003:	Define	anu e	xpiam Connectedness	Cogi	nuve		erstandi	
<u></u>	Define	and F	xplain Compactness	Corr	itive		emberir	U
0.04	Denne	anu f	Aprant Compactness	Cogi			erstandi	
CO5:	Define	and E	xplain Countability and Separation Axiom	Cogr	nitive	Rem	emberir erstandi	g
UNIT	Т. Торо	logica	l Spaces	I				1
			- Basis for a topology - The order topology - The	produ	ct topol	ogyon	X x Y ·	
	ace topo				•			
UNIT	II Con	tinuoı	is Functions					1
Close	d sets an	d limi	t points-Continuous functions - the product topolo	ogy - [The met	trictop	ology	
			(continued) - Uniform limit theorem.					
	TIII Con							15
			connected subspaces of the Real line - Componen	ts and	local c	onnec	tedness.	1/
	<u>IV Cor</u>	•	ness					1
			www.act.auhanaaaa.af.tha Daal lina Limit Daint C		4			
			ompact subspaces of the Real line - Limit Point Co	ompac	tness –			
Local	Compac	tness.		ompac	tness –			1
Local UNIT	Compac V Cou	tness. ntabil	ity and Separation Axiom				na - The	
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Local UNIT The C Uryso	Compac V Countabil	tness. ntabil lity Ay izatior	ity and Separation Axiom tioms - The separation Axioms - Normal spaces - Theorem - The Tietz extension theorem.					
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Local UNIT The C Uryso LEC 60 TEXT 1. Ja	Compac V Countabil ohn metri CTURE FBOOK mes R. N	tness. ntabil lity Ay izatior TU 15 Munkr	ity and Separation Axiom tioms - The separation Axioms - Normal spaces - Theorem - The Tietz extension theorem. TORIAL es, "Topology", (2nd Edition) PHI Learning Pvt.	The U	Jrysohn Third I	Lemr	TOT 75 Reprint)	AL
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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	3	2			1	1	1	1	1
CO2	3	2			1	1	1	1	1
CO3	3	2			1	1	1	1	1
CO4	3	2			1	1	1	1	1
CO5	3	2			1	1	1	1	1
Total	15	10			5	5	5	5	5
Scaled Value	3	2			1	1	1	1	1

 $1 \overline{-5 \rightarrow 1, 6 \overline{-10} \rightarrow 2, 11 \overline{-15} \rightarrow 3}$

CO2: Define and Explain Regular expressions and Properties of Regular sets.UnCO3: Define and Explain Context Free grammarsCognitive Regular sets.	0 Leve	
4 0 0 L T 3 1 PREREQUISITE: Analysis COURSE OUTCOMES: Course outcomes: Domain CO1: Define and Explain Strings, Alphabets and Languages Cognitive Re Un CO2: Define and Explain Regular expressions and Properties of Regular sets. Cognitive Re CO3: Define and Explain Context Free grammars Cognitive Re	0 Leve	4
3 1 PREREQUISITE: Analysis 3 COURSE OUTCOMES: Domain Course outcomes: Domain CO1: Define and Explain Strings, Alphabets and Languages Cognitive Regular sets. Un CO3: Define and Explain Context Free grammars Cognitive	0 Leve	4
PREREQUISITE: Analysis COURSE OUTCOMES: Course outcomes: Domain CO1: Define and Explain Strings, Alphabets and Languages Cognitive Re CO2: Define and Explain Regular expressions and Properties of Regular sets. Cognitive Re CO3: Define and Explain Context Free grammars Cognitive Re	Leve membe	1
COURSE OUTCOMES:Course outcomes:DomainCO1: Define and Explain Strings, Alphabets and LanguagesCognitiveCO2: Define and Explain Regular expressions and Properties of Regular sets.CognitiveCO3: Define and Explain Context Free grammarsCognitive	emembe derstan	
Course outcomes:DomainCO1: Define and Explain Strings, Alphabets and LanguagesCognitiveCO2: Define and Explain Regular expressions and Properties of Regular sets.CognitiveCO3: Define and Explain Context Free grammarsCognitive	emembe derstan	
CO1: Define and Explain Strings, Alphabets and LanguagesCognitiveRe UnCO2: Define and Explain Regular expressions and Properties of Regular sets.CognitiveRe UnCO3: Define and Explain Context Free grammarsCognitiveRe	emembe derstan	
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CO3: Define and Explain Context Free grammarsCognitiveRe		ering
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UII	membe derstan	0
CO4: Define and Explain Pushdown Automata & properties of Cognitive Re	membe	ring
	derstan	ding
languages		
	membe derstan	
UNIT I	uerstan	12
Strings, Alphabets and Languages (Section 1.1 of the Text) Finite Automata (Chapters	2. Secti	
2.1 to 2.4)		
UNIT II		12
Regular expressions and Properties of Regular sets. (Sections 2.5 to 2.8 and 3.1 to 3.4))	
UNITIII		12
Context Free grammars (Section 4.1 to 4.5)		
UNIT IV		12
Pushdown Automata & properties of Context free languages Theorem 5.3, 5.4 (without	ut proof	f),
(Section is 5.1 to 5.3 and 6.1 to 6.3)		
UNIT V		12
Turning Machine and Chomski hierarchy, (Sections 7.1 to 7.3 and 9.2 to 9.4)		
LECTURE TUTORIAL		DTAL
45 15	60	
TEXTBOOK 1. J.E. Hopocroft and J.D. Ulman. Introduction to Automata Theory Languages a	and	
1. J.E. Hopocroft and J.D. Ulman, Introduction to Automata Theory Languages a Computation, Narosa, 1999	ulu	
REFERENCES		
1. G.ERevesz, Introduction to Formal Languages		
2. P.Linz, Introduction to Forma Languages and Automata, Narosa2000		

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	2	1		1	2		1		1
CO2	2	1		1	2		1		1
CO3	2	1		1	2		1		1
CO4	2	1		1	2		1		1
CO5	2	1		1	2		1		1
Total	10	5		5	10		5		5
Scaled Value	2	1		1	2		1		1

 $1 \text{-} 5 \rightarrow 1, 6 \text{-} 10 \rightarrow 2, 11 \text{-} 15 \rightarrow 3$

	RSECO		COURSENAME		L	T	P	C
	MA304		MATHEMATICAL STATISTICS		3	1	0	4
С	P	Α						
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CO1: L	Define a	nd Ex	plain Estimation Theory.	Co	gnitive		nember lerstand	
CO2:	Explain	and	solve Tests based on normal, t and f	Co	gnitive		lerstan	
	tions for		· · · · · · · · · · · · · · · · · · ·		e		Applyin	0
testing	of mean	ns, va	riance and proportions – Analysis of $r \times c$					0
tables –								
	ss of fit			~				
CO3: E	xplain	and s	olve Correlation And Regression.	Co	gnitive		lerstan	-
~~				G			pplyin	-
CO4: E	xplain	and s	olve Design of Experiments	Co	gnitive		lerstan	
CO5+ F	vnlain	ond c	olve Statistical Quality Control by X, R	Co	gnitive		applyin lerstand	<u> </u>
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	Estima	tion '	Гheory					12
Estimat	ors: Un	biase	dness, Consistency, Efficiency and Sufficiency -	Max	kimum l	ikelił	nood	
estimati	on - Mo	ethod	of moments.					
UNIT I	I Testir	ng Of	Hypothesis					12
Tests ba	ased on	norma	l, t and f distributions for testing of means, varia	nce a	and prop	oortic	ons –	
Analysi	s of $r \times$	c tabl	es – Goodness of fit.					
UNIT I	II Corr	elatio	n And Regression					12
-			correlation – Method of least squares – Plane of		-		-	
residual	s – Co	effici	ent of multiple correlation - Coefficient of p	artia	l correl	lation	- Mu	ıltiple
correlat	ion with	total	and partial correlation - Regression and Partial	corre	elations	in ter	rms of	lower
order co	o-efficie	nt.						
UNIT I	V Desig	gn of 1	Experiments					12
Analysi	s of var	iance	- One way and two way classifications - Comple	etely	random	nized	design	_
Randon	nized blo	ock de	esign – Latin square design.					
UNIT V	V Statis	tical (Quality Control					12
Analysi	s of var	iance:	Control charts for measurements (X and R chart	s) – (control	chart	s for	
attribute	es (p, c a	and nr	o charts) – Tolerance limits – Acceptance samplir	ng, Ir	ntroduct	ion to	SPSS	•
	CTURE	-	TORIAL	-			TOT	
45		15					60	
TEXTI								
			nd Kapoor. V.K., "Fundamentals of Mathematic	al St	atistics"	', Sul	tan Cha	and
	andsons	· · · · · · · · · · · · · · · · · · ·						
			ition, 2014.					
ĸĿŀĿŀ	RENCE	3						

- 1. J.E. Freund, "Mathematical Statistical", 5th Edition, Prentice Hall of India,2001.
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apping of CO's	PO1		PO3	PO4	PO5	PO6	PO7	PO8	PO9
C01	3	3			1			1	1
CO2	3	2			1			1	1
CO3	3	3			1			1	2
CO4	3	3			1		1	1	1
CO5	3	3			1		1	1	1
Total	15	15			5		2	5	6
Scaled Value	3	3			1		1	1	2

Mapping of CO's with PO's:

 $1 \overline{-5} \rightarrow 1, 6 \overline{-10} \rightarrow 2, 11 \overline{-15} \rightarrow 3$

	COURSE CODE	Ľ	COURSE NAME		L	Т	Р	C
Y	MA3E1	_	DATA ANALYSIS USING SPSS		3	0	0	3
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-	REOUIS	SITE:	Probability and Statistics		U	Ū	Ū	U
	RSE OU		•					
	se outco			Dor	nain	Le	vel	
			xplain Starting SPSS, SPSS Main Menus,		nitive		memt	bering
			ata Editor, Importing and Exporting data,	2	,			inding
	0		sing Bar and Pie diagram.					
			Explain measures of central tendencies and	Cog	nitive	Re	memt	ering
			ion using SPSS	002	,			anding
		-	xplain Type I and Type II error, Basics of one	Cog	nitive		memt	
			endent sample t-test and paired t-test using	2	,			inding
SPSS		in a c p						
		and E	xplain One way ANOVA, two way ANOVA	Cog	nitive	Re	memt	ering
			using SPSS	2	,			inding
	1		Explain correlation and regression using SPSS	Cog	nitive		memt	U
			r	2	,			inding
UNI	ГТ							9
		o SPS	S – Starting SPSS – SPSS Main Menus – W	orkin	g with	the T	Data E	ditor –
			porting and Exporting data. Plotting of Charts:					
						diagr	am. N	ultiple
Bar L	Diagram a	and Pi		onn		diagr	am, M	lultiple
	<u> </u>	and Pi	e Diagram.			diagr	am, M	lultiple
UNI	ΓIΙ		e Diagram.					9
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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	3	3			1			1	1
CO2	3	2			1			1	1
CO3	3	3			1			1	2
CO4	3	3			1		1	1	1
CO5	3	3			1		1	1	1
Total	15	15			5		2	5	6
Scaled Value	3	3			1		1	1	2

Mapping of CO's with PO's:

 $1 \xrightarrow{-5 \rightarrow 1, 6 \xrightarrow{-10 \rightarrow 2, 11 \xrightarrow{-15 \rightarrow 3}}}$

COU	RSECO	DE	COURSENAME	L	Τ	Р	С
YI	MA3E2		NUMERICAL METHODS	3	0	0	3
С	Р	Α					
3	0	0		L	Т	Р	Η
				3	0	0	3
	EQUISI						
	SE OUT		IES:	-		1	
	outcon			Dom		Le	
	Method	l-Curv	ion by using Bisection method-Newton-Raphson e fitting straight line and parabola.	Cogni		Remen	
CO2: S	olve Sir	nultan	eous Linear Equations.	Cogni	tive	Remem Underst	
C O3: F	ind the	value	of $y = f(x)$ using interpolation formula.	Cogni	tive	Remem Understa	0
of			nd second derivative of $f(x)$ and to find the value ical methods.	Cogni	tive	Remem Understa	bering
C O5: S	olve ord		differential equations by using various methods.	Cogni	tive	Remem Understa	0
UNIT I							9
			l Algebraic Equations & Curve fitting Bisection me straight line and parabola.	thod-Ne	wton	-Raphso	n
UNIT I	I						9
			eousLinear Equations-Gauss-Eliminationmethod-M lel methods	ethodof	facto	rization-	Gauss
UNITI							9
	ation - (ge's form		y-Newton forward and backward interpolation forn	nulae Ste	erling	g's formu	ıla-
UNIT I							9
			tion and Integration, Numerical differentiation, Tra three-eighth rule.	pezoida	l rule	-Simpso	n'sone
UNIT V							9
Numeri	cal Solu		f Ordinary Differential Equations, Euler's method – ctor corrector method.	fourth o	order	Runge-H	Kutta
-	CTURE	-				TO	ΓAL
45						45	
ГЕХТЕ	BOOK						
1. 9	Sastry.S	.S, "In	troductory Methods of Numerical Analysis", Prenti	ice Hall	of In	dia, 2000)
	RENCE						
	Addisc	on-Wes	s and Wheatley, Patrick.O,"Applied Numerical Ana sley,1989.	-		,	
2.		•	P, Thilakavathy.K, Gunavathy.K-Numerical Method t 2001.	is, S.Cha	and &	z Co. Lto	I,New

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	2	1	1	1		2			1
CO2	2	1	1	1		2			1
CO3	2	1	1	1		2			1
CO4	2	1	1	1		2			1
CO5	2	1	1	1		2			1
Total	10	5	5	5		10			5
Scaled	2	1	1	1		2			1
Value									

 $1 - 5 \rightarrow 1, 6 - 10 \rightarrow 2, 11 - 15 \rightarrow 3$

C P A L T P I 3 0 0 3 0 0 3 PREREQUISITE: Nil COURSE OUTCOMES: Course outcomes: Domain Level COI: Define and Explain special algebraic structures and their properties. Domain Level CO2: Define and Explain proficient in the theory of Modules Cognitive Rememberin Understandin Understandin Understandin Understandin Understandin CO3: Define and Explain Chain conditions – Primary Cognitive Rememberin Understandin	COUR		ODE	COURSE NAME		Ĺ	Т	P	C
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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO 1	3	2		1	1		1	1	1
CO 2	3	2		1			1	1	1
CO 3	3	2		1			1	1	1
CO 4	3	2		1	1		1	1	1
CO 5	3	2		1	1		1	1	1
Total	15	10	0	5	3	0	5	5	5
Scaled value	3	2		1	1		1	1	

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to 5.3, Section 6.1 to 6.5. Chapter 5 - Section 1.1 to 1.3, Section 2.1, Section 3.1 & 3.2.

REFERENCES:

1. S. Poonusamy, "Complex Analysis", Alpha Science International Ltd; 2nd Revised edition, 2005.

COs vs POs Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	2	1	1	1		2			1
CO2	2	1	1	1		2			1
CO3	2	1	1	1		2			1
CO4	2	1	1	1		2			1
CO5	2	1	1	1		2			1
Total	10	5	5	5		10			5
Scaled Value	2	1	1	1		2			1

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$

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CO2	2	1	1	1		2			1
CO3	2	1	1	1		2			1

CO4	2	1	1	1	2	1
CO5	2	1	1	1	2	1
Total	10	5	5	5	10	5
Scaled Value	2	1	1	1	2	1

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TEXTBOOKS

1.J.N. Kapur, Mathematical Modelling, Wiley Eastern Limited, New Delhi, 1988.

REFERENCES

1. J. N. Kapur, Mathematical Models in Biology and Medicine, Affiliated East –West Press Pvt Limited, New Delhi, 19

COs vs POs Mapping

	PO1		PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	3	2			1	1	1	1	1
CO2	3	2			1	1	1	1	1
CO3	3	2			1	1	1	1	1
CO4	3	2			1	1	1	1	1
CO5	3	2			1	1	1	1	1
Total	15	10			5	5	5	5	5
Scaled Value	3	2			1	1	1	1	1

 $1-5 \rightarrow 1, 6-10 \rightarrow 2, 11-15 \rightarrow 3$