Course	e Code		Title									
21U3C	KC101		Coro Pan	or I · D	wthan Program	min	a					
<b>22U3C</b>	KC101		Core rap		ython r rogran		g					
Semes	ster: I		Credits: 4	CLA	A: 50 Marks		ESE: 50 I	Marks				
			(Common to B. Sc.	IT / A	IML / BCA)							
Course	Objectiv	/e	To develop algorithmic see Python	olutior	is to simple con	nputa	tional prot	olems using				
Course	Categor	у	Employability									
Develop	ment No	eeds	Global									
Course	Descript	tion	Python is a versatile progra fields, such as software de science, arts, education, ar	cammine velops and other	ng language that nent, governme ers	t can nt ad	be used in ministratio	a variety of n, business,				
Course	Outcom	mes Teaching Methods Assessment Methods										
CO 1	Unders simple	tand pytho	the basics of Python and n program.	write	Lecture / Demonstrati Flipped Classroom	on /	Assi	gnment				
CO 2	Develo Statemo	p Py ent an	othon programs with C d List method.	ontrol	Demonstrati Constructiv Approach Tutorial	on / vist	Se	minar				
CO 3	Apply develop	Tuple o simp	s, Functions and Set Iterat ble applications	ors to	Lectures Demonstrativ Video Lesso	/ on / ons	(	Quiz				
<b>CO 4</b>	Apply Excepti	Pythe	on Strings, Multithreading or problem solving.	g and	Tutorial / Demonstrati Case Studi	/ on / es	Program Execution					
CO 5	Manipu	ılate F	Files and perform Event Han	dling.	Lecture / Demonstrati Class Proje	on / cts	Program	n Execution				
Offered	by In	forma	ation Technology									
Course	Content			]	nstructional H	ours	/ Week : 4					
Unit			Description				Text Book	Chapters				
I	<b>Fundam</b> Applicati Memory Python- Styles: D Evaluatio	entals ions – mana Keyw Data T on of H	<b>of Python Programming:</b> Installation-Sample Program agement in Python-Comparis ords, Identifiers, Statements, ypes – Literals – Variables-C Expression-Sample Programs.	Introdu -Pytho on bet , Inder )perato	iction – Features n Virtual Machir ween C, Java a itation. Syntax a rs and Expression	ne- nd nd ns-	1	1,2				
q		•			Instruc	<u>ctiona</u>	al Hours	<u>12</u>				
Sugge	sted Lean	rning	Methods: Video lectures abo	out the	basics of Python	Prog	gramming	02 Hrs				
II	Control Flow:If – While – For – Break – Continue-Pass-Entry Controlled Loop - Exit Controlled Loop – Counter Controlled Loop - Condition Controlled Loop - Nested Loop - Sample Programs. Arrays-Sequences - Python Lists:1,23,4,5,9Arrays-Sequences - Python Lists:Read a List type from a List – Basic Operations - Built-in Functions – Python List Methods.1,2											

Instructional Hours 12											12			
			Sug	gested	l Lear	ning N	letho	ds: Pr	ac	tice usi	ng Flov	v Chart	s 02	Hrs
III	Tuple progra Dictic Progra Argun Argun Passir Scope	s -Need ams.Did onary ( ams. F nents-K nents-V ng Ar e of Loc	d of a T ctionari Operatio unction Keywor /ariable gument cal and	Fuple-S es: M ons – s: Defi d A e Lengti s-Anor Global	equenc laking Sets-It ning F rgume h Argu ymous Variab	e of Un a Di erators Functior nts-Def ments-I Func les.	packin ictiona and ns-Call ault Return ctions-]	ng – M ry-Bas Genera ing Fu Argu Stater Recurs	fet sic ato unc unc unc sive	hods –Sa Opera ors – Sa ctions-Pa ents-Rec nts-Nest e Func	ample tions- ample assing quired ing of tions-	1	6	,7,8
· · ·	•									Instr	uctiona	l Hour	s	12
	Sug	gested	Learr	ning M	[ethod	s: Dev	elop s	mall	pro	ogramr	nes usin	g tuple	s 02	Hrs
IV       Strings in Python: Reading – Accessing – Modifying – Finding -         IV       Iterating through a String - Build-in String Functions. Errors and       2         Exceptions – Multithreading       2											8			
										Instr	uctiona	l Hour	s	
			Su	ggeste	d Lear	rning N	Aetho	ds: D	ev	elop sm	all app	lication	s 02	Hrs
V	Files Read Iterat Dese Even	and D ing/Wr ing the rializati t names	<b>irector</b> iting O rough on. Eve s - Kev	y Acce peration a File ents: Ev board e	ess: Fil ns in a - Spl yent Ob events -	es and File - itting jects - I Mouse	Strean Other Words Bindin	ns - O operat - Se g callb ts - Sat	per ion ria acl	ning a F ns in a F lization ks to eve le Progr	File - File - and ents - ams	1	13	3,17
	2,011		, 110	o o ur ur u	· • • • • •	1120000	2.011		P	Instr	uctiona	l Hour	s	12
				Su	ggeste	d Leai	ning	Meth	od	s: Labo	oratory	practic	e 02	Hrs
					88						Tota	l Hour	<b>s</b> 60	Hrs
Text Bo	oks		1. Ch Un 2. Dr Ye	.Satyar iversity .S.A.Ku sdee Pu	aryana 7 Press 11karni, 1blishir	, M.Ra Pvt. Lto , Proble ng,2018	dhika d.2018 em Sol	Mani, ving a	B. and	.N. Jaga Python	desh, Py Progran	rthon Pro	ogrammi end Editi	ng, ion,
Referen	ce Boo	ks	1. All 2nd 2. Gu and	len B. I d editio ido van d updat	Downey n, Upd Rossu ed for I	y, Thinl ated for m and F Python	k Pyth Pythc Fred L. 3.2, Ne	on: Ho on 3, S Drake etwork	ow hrc Jr Tł	to Thinl off/O'Re , An Intr heory Lt	k Like a illy Publ oduction d.,2011.	Compute ishers,20 to Pytho	er Scien 16 n – Revi	tist, sed
Web. U	RLs													
		-		То	ols for	·Asses	smen	t (50 I	Ma	rks)				
CIA	I	CI	A II	C	IA III	As	ssignn	nent		Semina	ar (	Quiz	To	tal
8			8		10		8			8		8	5	0
						Ma	pping	Ş						
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO	8	PSO1	PSO2	PSO3	PSO4	PSO5
C01	H	H	Н	L	Μ	М	-	-		Μ	Н	Н	М	М
CO2	M	M	M	M	H	M	-	-	_	H	H	H	M	H
CO3	H		M	H M	M	M	-	-	_	M LI	H M	H U	M U	M
C04	M	H M	L U	м ц	L M	L U	-	-	_	п ц	м ч	н	н u	м ч
H_High	M-Me	dium•1		11	111	11				11	11	141	11	11
	111 14100	~		_										
		Cours	e desig	ned by	y						Verifie	ed by		

Course	e Code		Title								
21U3C	JC102		Core P	aner II	• Data Structures						
22U3C	JC102		Core 1		. Data Structures						
Semes	ster: I		Credits: 4	CIA	: 50 Marks	<b>ESE: 50</b>	Marks				
			(Common to B.	Sc. AI	ML / DS)						
Course	Objectiv	ve	To enable the students to Linked list Searching and	unders Sortin	tand about the vari $\alpha$ apply them to so	ous techniq	ues such as				
Course	Categor	'y	Skill Development /Emple	oyabilit	ty/Entrepreneurship		a programo.				
Develop	oment N	eeds	Global								
Course	Descrip	tion	To understand the concept searching and sorting and appropriate Data Structure	t of Arr apply t e.	ays, Stacks and Qu so solve real world	eues, Linke problem usi	ed list, ng				
Course	Outcom	es			Teaching Methods	Assessme	ent Methods				
CO 1	Unders Stacks	tand t and Q	he representation of Arrays Queues.	5,	Lecture/ Demonstration		Quiz				
CO 2	Solve t	he pro	oblems using Queues and L	ist.	Lecture / Demonstration		Quiz				
CO 3	Demon represe	strate ntatio	different types of Tree on and Graph.		Tutorial, Demonstration	Se	eminar				
CO 4	Design of Sort	Algo ing.	rithm to perform different t	ypes	Problem-Based Teaching, Constructivist learning	eaching, nstructivist earning					
CO 5	Illustra and app approp	te Syn oly to riate I	nbol, hash and File organiz solve real world problem u Data Structure.	ation sing	Lecture / Demonstration	Ass	ignment				
Offered	by Ar	tificia	al Intelligence and Machin	ne Lea	rning						
Course	Content	;			Instruct	ional Hour	s / Week: 4				
Unit			Description			Text Book	Chapters				
Ι	Introdu Arrays Arrays. Express	iction : Axi Sta sions	<ul> <li>a: Overview - create Progra</li> <li>omatization - Sparse Mata</li> <li>cks &amp; Queues: Fundam</li> <li>Multiple Stacks and Queu</li> </ul>	ims - A rices - nentals es.	nalyse Programs. Representation of - Evaluation of	1	1,2,3				
	Suggo	tod I	anning Mathadas Write	Algonia	Instruction	nal Hours	12				
п	Suggested Learning Methods: Write Algorithms for Kear time Scenario5Recursion: Recursive definition and process - recursion in C - Writing Recursive program - simulating Recursion - efficiency of recursion. Queues and List: The queue and its sequential representation - Linked list - List in C - An example Simulation23,4										
	using lif	iked l	ist - other list structure.		Instruction	nal Hours	12				
			Suggested Lear	ning M	Iethods: Video Pre	esentation	3				
III	Trees: algorit applica represe	Bina hm - ations entatio	ry Tree - Binary Tree repr - representing list as Bi - Game trees. <b>Graphs:</b> A l on of Graph - Graph travers	esentat inary - Flow pr sal and	ion - the Huffman Trees and their oblem - The linked spanning forests	2	5,8				
		representation of Graph - Graph traversal and spanning forests Instructional Hours									

				~			ing Matheda, Video Duccontati					-		
				Su	Iggeste	ed Lea	rning I	Metho	entatio	n 2				
	Interr	nal Sor	ting: I	nsertic	on Sort	- Qui	ck Sort	- 2-W	'ay Merg	ge Sort				
IV	- Heaj	p Sort	- Shel	I Sort	. Exte	rnal S	orting	: Stor	age Dev	/1ces -	1	7	',8	
	R-wa Polyni	y Merg	erge	orung	, with	Tape	S: Dala	inceu	wieige :	Sons -				
	<u>i oiypi</u>		<u>erze.</u>						Insti	ructions	Hour	s .	12	
				Su	aaesta	ea I he	rning I	Meth	de Vid	en Prese	ntatio	n	2	
	Symbo	d Tabl	e. Stat	ic Tree	Table	s - Dv	namic [	Tree 7	Tables		IIIalio		4	
	Hash 1	n 1 abi Fahles	• Hashi	no Fiii	nctions	s - Dy s- Ovei	rflow H	andli	10105.					
V	Files: F	iles O	ieries a	nd Sea	uential	Organi	zations-	Index	Technia	ues -	1	9	10	
•	File Oi	rganiza	tion: S	equent	ial Org	vanizati	on- Rar	ndom	Organiza	tion-	1	,	10	
	Linked	Organi	zation.	• • • • • •					018411124					
I		0							Insti	ructiona	l Hour	s :	12	
				Sug	gested	l Lear	ning M	[ethod	ls - Rep	ort Pret	paration	n	3	
										Tota	l Hour	s (	<u>-</u> 60	
			<b>1.</b> E	Illis Ho	orowitz	&Sart	ajSahni,	Fund	amental	s of Data	a Struct	tures, G	algotia	
Publication. 2 Aaron M. Tananhaum, Vadiduah Langsam, Masha, I Auganstain, Data												C		
2. Aaron M. Tenenbaum, YedidyahLangsam, Moshe J.Augenstein, D.												Data		
Structure using C, Pearson Education, 2009.														
<b>Unit I:</b> Sections: 1.1 to 1.4, 2.1 to 2.4 and 3.1 to 3.4 (Text Bo												ok 1: Cl	napter	
Text Books1, 2 and 3)														
			Unit	II: Se	ctions:	3.1 to	3.4, 4.	1 to 4.	5 (Text)	Book 2:	Chapte	r 3 and	4)	
			Unit	III: S	ections	s: 5.1 to	o 5.6 (T	ext B	ook 2: C	hapter 5	5)			
			Unit	IV: Se	ection:	7.1 to	7.8, 8.1	l to 8.	3 (Text ]	Book 1:	Chapter	r 7 and 8	8)	
			Unit	V: See	ction:	9.1 to 9	9.3, 10.	10.1, 10.3 (Text Book 1: Chapter 9 and 10)						
			<b>1.</b> E	llis Ho	orowitz	, Sartaj	Sahni &	& San	guthevar	Rajaseka	iran, <b>Fu</b>	ndamen	tals of	
			0	Compu	ter Alg	gorithn	<b>ns</b> , Galg	otia Pı	ublication	s Pvt Lto	l, 1999.			
Referen	ce Boo	ks	<b>2.</b> J	ean-Pa	ul Tre	mblay	and Pa	aul G	.Sorensor	n, An I	ntroduc	ction to	Data	
iterer en			S	tructu	res wit	h App	olication	is, Sec	ond Editi	on, Tata	MaGrav	v Hill,20	08.	
			3. N	1ark A	llen W	eiss, Da	ata Stru	icture	s and Al	gorithm	Analysi	s in C, $1$	Florida	
Wab III				iternat	ional U	niversi	ty, Pears	son Ec	lucation,	Second E	altion,	1997.		
Web. UI	NL5			<u></u>	<u>w w w.</u>		<u>IIIIZ.COI</u>							
	-	~		10	ois ior	Asses	sment (	(50 IVI	arks)		<b>.</b> .			
CIA	1	CL	AII	C		As	signme	ent	Semina	ar (	Quiz	То	<u>tal</u>	
8			8		10		8		8		8	5	0	
						Ma	pping							
CO/PO	PO1	PO2	PO3	PO4	PO5	<b>PO6</b>	PO7	<b>PO8</b>	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	Μ	Н		М			Μ	Μ	М	М	М	М	М	
CO2	М	М		М	М		Μ	Н	М		Н	M	Н	
CO3	Н	Н		М	М		Μ	Н		М	Н	M	М	
CO4         H         H         M         M         H         H         H         M         M         H										Н				
<u>CO5</u>	H	M		М	М		М	Н	М	М	M	Н	М	
H-High;	M-Me	dium; l	L-Low											
Course designed by										Verifie	d by			
											•			

Course	e Code Title									
21U3A	<b>MP101</b>		Core Paper III.	Practi	cal in Python P	roors	amming			
22U3A	MP101			Tracti		TUgi	timining			
Semes	ter: II		Credits: 4	CIA	: 50 Marks		ESE: 50 Marks			
			(B.Sc. Artificial Intelligen	ice and	Machine Lear	ning	)			
Course	Objecti	ve	To introduce the concepts	of pyt	hon programmin	ig coi	nstructs.			
Course	Categor	y add	Skill Development /Empl	oyabili	ty/Entrepreneurs	ship				
Develo	<u>pinent N</u>	eeus	To development skill set i	n pytho	on programming	and	apply the concepts to			
Course	Descrip	tion	develop applications in c	order to	meet the Local	and (	Global needs.			
Course	Outcom	ies			<b>Teaching Meth</b>	ods	Assessment Methods			
CO 1	Devel	op sin	nple Python programs.	rams. Program Demonstrat Projects			Program Creativity			
CO 2	Under statem	stand ents.	and apply the concept of co	Program Demonstratio	on	Debugging				
CO 3	Apply the concept of looping constructs and functions for solving basic programs.Laboratory Practice,Application of Logic									
CO 4	functions for solving basic programs.       Practice,         Develop programs for sorting of Strings,       Constructivist       Program Development         Lists, Tuples and File handler.       learning, Code       review									
CO 5	Create Search	e prog 1 Tecł	rams using Linear and Bina	ary	Demonstratio Projects	on,	Program Development			
Offered	l by Ar	tificia	al Intelligence and Machin	ne Lea	rning					
Course	Content	t			Inst	ructi	onal Hours / Week: 4			
Unit			Lis	t of Pr	actical					
1	Write a p number,	oython Colle	program that displays the fol ge name, Course subjects.	lowing	information: You	r nam	e, Full Address Mobile,			
2	Write a operator	pytho r.	n program to find the large	st three	integers using i	f-else	e and conditional			
3	Write a should e display	pytho enter a the nu	n program that asks the use a negative number to signal umbersin order and their su	er to en the en m.	ter a series of po d of the series) a	ositive and th	e numbers (The user e program should			
4	Write a	pytho	n program to find the produ	uct of t	wo matrices.					
5	Write re	ecursi	ve functions for GCD of tw	o integ	ers.					
6	Write re	ecursi	ve functions for the factoria	l of po	sitive integer.					
7	Write re	ecursiv	ve functions for Fibonacci S	Sequen	ce up to given n	umbe	er n.			
8	Write recursive functions to display prime number from 2 to n.									
9	Write a p	oython	program that writes a series of	of rando	om numbers to a fi	ile fro	om1 to n and display.			
10	Write a python program to sort a given sequence: String, List and Tuple.									
11	Write a	pytho	n program to make a simpl	e calcu	lator.					

12	2 Write a python program for Linear Search and Binary Search.												
13	13Write python program in which a function (with single string parameter) is defined and calling that function prints the string parameters given to function.												
14	14 Write python program in which a class is define, then create object of that class and call simple print function define in class.												
Total Hours 60													
Suggested Learning Methods: Solving Case studies, Program development, Code Review and Peer Coding       10											.0		
				Τα	ols fo	ssment	(50]	Marks)					
Applica of Log	Prog Crea	e- gram itivity	e- P Deb	rograi ouggin	Test 1		Test 2	Obser Note	vation Book	То	tal		
8			8		8		10		10	(	6	5	0
						Μ	apping						
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO	8 PSO1	PSO2	PSO3	PSO4	PSO5
CO1	Η	Н		М	Η		Μ	Η	Η	Н	Н	М	Μ
CO2	Η	Н		М	Η		Μ	Η	Η	Н	Н	М	М
CO3	Н	Н		Μ	Н		Μ	Η	Н	Н	Н	Н	Н
CO4	Η	Н		М	Н		Μ	Η	Н	Н	Н	Н	Н
CO5	Η	Н		Μ	Η		Μ	Η	Н	Н	Н	Н	Н
H-High;	M-Me	dium;	L-Low										
	Course designed by Verified by												

Course	e Code	Title									
22U3M	KA101		Statistics for	r (	Computer Science	e					
Seme	ster: I		Credits:4 C	[A	: 50 Marks		ESE: 50	Marks			
		I	(Common to all UG P	ro	grammes)						
Course	Objectiv	'e	To enable the students to learn Statistical methods.	an	d visualize the fur	nda	mental ide	eas of			
Course	Categor	y	Skill Development								
Develop	oment Ne	eds	Regional								
Course	Descript	ion	Statistics play an intrinsic role i is used for data mining, speech compression, artificial intellige	n re nc	computer science cognition, vision a cognition, vision a contract of the comparison	and and d tr	l vice vers image an affic mod	a. Statistics alysis, data elling			
Course	Outcom	es			Teaching Method	ls	Assessme	nt Methods			
CO 1	Impler Centra	nent t 1 tend	he basic concepts of measures of ency and dispersion	2	Lecture / Peer Teaching		Ass	ignment			
CO 2	Under Regres	stand ssion	the concepts of Correlation and	e	Proble	em solving Skill					
CO 3	Calcul	ate pr	obability using Baye's theorem	Lectures / Video Lecture	0	Seminar					
CO 4	Know variab	3	Assignment								
CO 5	Analys and No	se the	properties of Binomial, Poisson		Lecture /Tutoria	ıl		Quiz			
Offered	by Ma	athen	natics								
Course	Content			Ir	nstructional Hour	rs /	Week:5				
Unit			Description				Text Book	Chapters			
I	Statistic Arithme Measure deviation	s – tic me es of n- Co	Introduction–Measures of ( ean- Median - Mode dispersion – Range-Standard of efficient of variation	Ce lev	ntral tendency- viation –Quartile		2	7, 8			
Suggost	ad I again	ing N	Acthoda . Crown Discussion	- (	<u>Instructio</u>	na	l Hours	15 02 Urs			
II	ted Learning Methods : Group Discussion & QuizCorrelation: Definition – Scatter diagram-Karl Pearson's correlation co-efficient-Rank correlation co-efficient –Properties.Regression: Introduction – Construction of regression equations – Properties.2										
					Instructio	na	l Hours	15			
Suggest	ed Learn	ning N	Methods : Problem solving Prac	cti	ce	-1		02 Hrs			
III	probabil probabil Indepen Baye's t	ity: ity- dent heore	Addition Axioms of prob Addition theorem- Multi event - Conditional probability m.	pli pli	ication theorem Total probability	al 1- -	2	vol. 11- 1			
					Instructio	na	l Hours	15			

## **B.Sc. CS (DS) / AIML**

Suggest	d Lear	ning N	Aethor	ls · Cl	ass Te	st & h1	ttns•//v	outu k	e/CVv	<sup>¬</sup> vVFo(	<sup>~</sup> mM	02	Hrs
Duggest	Randor	n varia	hles _	Discre	te rand	$\frac{31 \times 10}{1000 \text{ yr}^2}$	riables.	Proha	bility m	251100		02	1115
	function	n- Con	tinuou	s rando	m var	ioni va iables -	– Proha	hility a	density	<b>u</b> 55	1		5
IV	function	n Con	unuou	STanac	/iii vai	luoies	11000	onny	density				5
	Mat	hemat	ical Ex	nectati	ion – P	roperti	es and	simple	problet	ns on			6
	PM	F and 1	PDF	pectai		Toperu	cs and	simple	proble	115 011	1		0
	1 101	I und							Instr	uctiona	l Hours	s .	15
Suggest	ed Lear	ning N	<b>Aetho</b>	ls : Pr	oblem	ı solvir	ng Prac	ctice			11041	02	Hrs
	Discret	e Prol	nahility	7 Dist	ributio	ns-Rin	omial	Poiss	on Not	mal -			
V	Simple Problems only.											Vol	. II-2
	ompie	11001		ly.					Tre at re		1 11	~	15
Suggest	dIoor	ning N	Jotho	la . Du	antina	Toata			Instr	uctiona	I Hours	<u>s</u>	IJ IIma
Suggesu	eu Lear	mng N	leulo		actice	Tests				Tata	1 Hours		
			1 0	C Cu	ntha an	AVV	Vanoor	Fund	omonto	10ta	<u>I HOUR</u>	<u>8 73</u>	HIS
			1. 5	Statisti	rs S (	Thand	and So	, runu ns Rei	amental	.5 01 IVI. 09	atiitiiati	Cal	
Text Bo	oks			, unsu	<b>c</b> b, b. <b>v</b>	ciluliu		115, ICe	5111 <b>1</b> , 20	07.			
2. S P Gupta, Statistical methods, S. Chand and Sons, Reprint, 2017.													
Defense Decks 1. D. D. Vittel Mathematical Statistics Marsham Dublications Channel													
Keleren	ce door	45	1. P	K. VII	tal , <b>IVI</b> a	athema	lical St	austics	, Margna	iiii Puoli	cations, C	Inennai	
Web. Ul	RLs		Web	Refer	ences	URLs	): http://	s://you	tu.be/C	VvCvY	FoCmN	Л	
				То	ols for	Asses	sment	(50 Ma	arks)				
CIA	I	CI	A II	C	IA III	As	signm	nent Seminar		nar Quiz		То	tal
8			8		10		8		8		8	5	0
						Ma	pping						
CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	Н	Н	L	Н	Н	Н	Н	Н	L	L	L	L	L
CO2	Н	Н	L	Н	Н	Н	Н	Н	М	-	М	-	L
CO3	Н	М	L	М	М	Н	М	Н	L	-	L	-	Μ
CO4	Н	Н	L	Н	Н	Н	Н	Н	Μ	Μ	Μ	L	Μ
CO5	Н	Н	L	М	М	Н	Μ	Н	М	М	М	L	Μ
H-High;	M-Med	lium; L	L-Low										
	(	Course	e desig	ned by	7					Verifi	ed by		

Course	rse Code Title									
22U3C	KC203		Core Paper	· IV: Java Programm	ng					
Semes	ter: II		Credits: 4	CIA: 50 Marks	ESE: 50	Marks				
		1	(Common to B. Sc. CS	/ IT / AIML / BCA)						
Course	Objecti	ve	To gain knowledge about ba java programs and unde inheritance, polymorphism	vledge about basic Java language syntax and semantics to write ms and understand the principles of classes, methods, polymorphism and packages.						
Course	Categor	У	Skill Development /Employ	ability/Entrepreneurshi	р					
Develop	oment N	eeds	Global							
Course	Descrip	tion	To understand the Object-O using Control statements, A Handling, Multi-threading a	Fo understand the Object-Oriented Paradigm for deve using Control statements, Arrays, Packages, Interface Handling, Multi-threading and create networking app						
Course	Outcom	ies		Teaching Methods	Assessmen	t Methods				
CO 1	Remen Object	ber tl	he fundamental concepts of ted Programming	Lecture / Demonstration	Class Pa	articipation				
CO 2	Develo Contro	p sim	ple Java programs with ments and arrays.	Demonstration, Constructivist learning	(	Quiz				
CO 3	Apply interfac	the pr ces.	inciples of packages and	Constructivist learning Demonstration	Se	minar				
CO 4	Design concep Multith	Java ts of I readi	application using the Exception Handling and ng.	Lecture, Constructivist learning,	Se	minar				
CO 5	Develo and AV	Assignment								
Offered	l by Co	ompu	ter Science							
Course	Content	t		Instruc	tional Hour	s / Week: 4				
Unit			Description		Text Book	Chapters				
Ι	Fundar Oriente Prograr Applica History Internet simple Java Vi	menta d Pa nming ation – Fea t – Ja Java rtual	als of Object-Oriented P uradigm – Basic Concept g – Benefits of Object-Or of Object-Oriented Program atures – How Java differs from va and www –Web Browse program – Structure – Java Machine-Command Line Arg	rogramming: Object- s of Object-Oriented iented Programming – ming. Java Evolution: n C and C++ – Java and rs. Overview of Java: Tokens – Statements – guments.	1	1,2,3				
			ea I batzannu?	Instruction rning Methods: Code	Debugging	12				
II	Constants, Variables, Data Types, Operators and Expressions,         Decision Making and Branching: if, ifelse, nested if, switch,? :         Operator, Decision Making and Looping: while, do, for – Jumps         in Loops - Labelled Loops, Classes, Objects and Methods. Arrays:         One Dimensional Array-Creating an Array- Two Dimensional         Array.									
			0 ( ) 7	Instructio	onal Hours	12				
III	Suggested Learning Methods: Code DebuggingInterfaces: Multiple Interface-Introduction-Defining Interface- Extending Interface-Implementing Interface-Accessing Interface Variables. Packages: Introduction-Java API Packages-Using System Packages Naming Conventions Creating Packages1									
	Systen	u ra	chages-maining Convention	ns-Creating Packages-						

Accessing a Package-Using a Package-Adding a Class to a Package-Hiding Classes-Static Import.												
Instructional Hours	12											
Suggested Learning Methods: Simple Application Development	3											
IVException Handling: Fundamentals-Hierarchy of the Exception Classes- Types of Exception -Exception Class-Uncaught Exceptions-Handling Exception-User Defined Exception. Multithreaded Programming: The Java Thread Model-Concept of Thread-Runnable Interface-Thread Class-Thread Creation- Thread's Life Cycle-Thread Scheduling-Synchronization and Deadlock-Inter Thread Communication-Joining Threads- Suspending Resuming and Stopping Threads- IDBC2	.0 & 11											
Instructional Hours												
Suggested Learning Methods: Simple Application Development	3											
Suggested Learning Freehous, Simple Application DevelopmentInput/Output Classes: Input and Output Operations-Hierarchy of Classes in java.io Package-File Class-InputStream and OutputStream Classes-FileInputStream and FileOutputStream Classes-Reader and Writer Classes-RandomAccessFile Class-Stream Tokenizer.VApplets: Applet Basics-Applet Life Cycle-Running Applets-Methods of the Applet Class-Graphics Class-Color Class-Font Class-Limitations of Applets. Java Networking -INetaddress-User Datagram Protocol, Internet Control Protocol, UDP Programming in Java Transmission Control Protocol, Multithreading & TCP Sockets Programming in Java.2												
Instructional Hours 12												
Suggested Learning Methods: Simple Application Development	3											
Total Hours	60											
1. E. Balagurusamy, Programming with Java – A Prim         McGraw Hill Publication, 3 <sup>rd</sup> Edition, 2007         2. ISRD Group, Introduction to Object Oriented Progra         Through Java, Tata McGraw Hill Publication, Forth Repri         3. Java Network Programming, 4th Edition, Orielly Publication.         1. Patrick Naughton& Hebert Schildt, The Complete Reference Ja         McGraw Hill Publication, 3 <sup>rd</sup> Edition, 2002         2. John R. Hubbard, Programming with Java, Tata McGraw         Publication, 2 <sup>nd</sup> Edition, 2009.	er, Tata amming int 2008. wa 2, Tata raw Hill											
Web. URLs     https://www.w3schools.com/java/default.asp												
Tools for Assessment (50 Marks)												
CIA I CIA II CIA III Assignment Seminar Quiz 7	Гotal											
8 8 10 8 8 8	50											
Mapping												
CO / PO         PO1         PO2         PO3         PO4         PO5         PO6         PO7         PO8         PS01         PS02         PS03         PS04	4 PSO5											
CO1     H     H     M     H     H     H     H	M											
CO2     H     H     M     H     H     H     H       co2     H     H     M     H     H     H     H     H	M											
CO3     H     H     M     H     M     H     H     H       CO4     H     H     H     H     H     H     H     H	H 11											
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	<u> п</u> Н											
H-High; M-Medium; L-Low												
Course designed by Vorified by												
Course designed by Vermed by												

Course	e Code Title										
22U3A	MC202		Core Pape	r V:	Computer Networl	KS					
Semes	ster: II		Credits: 4	CIA	A: 50 Marks	ESE: 50	Marks				
			(Common to B. Sc	. DC	FS / AIML)						
Course	Objecti	ve	To make the students under	stand	the concepts of Con	nputer Net	works.				
Course	Catego	сy	Skill Development /Employ	yabili	ty/Entrepreneurship						
Develo	pment N	eeds	Global								
Course	Descrip	tion	To inculcate knowledge on Wireless, Broadband and B	Netw lueto	orking concepts and oth.	l technolog	ies like				
Course	Outcom	nes			<b>Teaching Methods</b>	Assessme	ent Methods				
CO 1	Descrit	be the	uses of networks.		Smart Board / Demonstration	Ass	signment				
CO 2	Illustra networ	te the ks	transmission technologies of	f	Smart Board / Demonstration	S	eminar				
CO 3	Analys	e the	services and the features of the services and the features of the services and the services are services a	he	Demonstration	S	eminar				
CO 4	Determ how to	ine th contr	e network layer and understa ol the congestion in the netwo	and ork.	Video Lessons	Group	Discussion				
CO 5	Apply networ	Ass	signment								
Offered by     Artificial Intelligence and Machine Learning											
Course Content   Instructional Hou											
Unit			Description			Text Book	Chapters				
Unit I	Introd Hardwa	uction are - N	<b>Description</b> <b>a:</b> The Uses of Computer Network Software - Reference	Net e Mo	works - Network del	Text Book 1	Chapters 1				
Unit I	<b>Introd</b> Hardwa	uction are - N	<b>Description</b> <b>a:</b> The Uses of Computer Network Software - Reference	Net e Mo	works - Network del Instructior	Text Book 1 al Hours	Chapters 1 12				
Unit I	Introd Hardwa	uction are - N	Description a: The Uses of Computer Network Software - Reference Suggested Learning poly Louger Cycled Tree	Net e Mo	works - Network del Instruction ethods: Report Pre	Text Book 1 al Hours sentation	Chapters           1           12           2				
Unit I II	Introd Hardwa The I Commu Networl Modem	uction are - N Physic inicati k - Str s - Wi	Description The Uses of Computer Network Software - Reference Suggested Learnin cal Layer: Guided Tra on Satellites - The Public ucture of the telephone syste reless Local loops	Net e Moo ng M ansmi c Sw m - T	works - Network del <b>Instruction</b> ethods: Report Pre ission Media - /itched Telephone 'he Local Loops -S	Text Book 1 al Hours sentation 1	Chapters           1           12           2           3				
Unit I II	Introd Hardwa The I Commu Networl Modem	uction are - N Physic micati k - Str s - Wi	Description The Uses of Computer Network Software - Reference Suggested Learnin cal Layer: Guided Tra on Satellites - The Public ucture of the telephone syste reless Local loops	Net e Mo ng Mo ansmi c Sw m - T	works - Network del <b>Instruction</b> ethods: Report Pre ission Media - /itched Telephone The Local Loops -S <b>Instruction</b>	Text Book 1 aal Hours sentation 1 aal Hours	Chapters           1           12           2           3           12				
Unit I II	Introd Hardwa The I Commu Networl Modem	uction are - N Physic unicati k - Str s - Wi	Description The Uses of Computer Network Software - Reference Suggested Learnin cal Layer: Guided Tra on Satellites - The Public ucture of the telephone system reless Local loops Suggested Learnin Suggested Learnin	ng Met ng Met ansmi c Sw m - T	works - Network del Instruction ethods: Report Pre ission Media - vitched Telephone 'he Local Loops -S Instruction ethods: Report Pre	Text Book 1 al Hours sentation 1 al Hours sentation	Chapters         1         12         2         3         12         2         3         12         2				
Unit I II III	Introd Hardwa The I Commu Networl Modem The I Detect The ch Blueto Switcl gatewa	uction are - N Physic Inicati k - Str s - Wi Data I Lion & hannel poth: I hing:	Description The Uses of Computer Network Software - Reference Suggested Learnin Cal Layer: Guided Tra on Satellites - The Public ucture of the telephone syste reless Local loops Suggested Learnin Cink Layer: Data Link Lay Correction. The medium ac allocation problem. Bluetooth architecture - Appli Repeaters, Hubs, Bridges,	Net e Moo ng Mo ansmi c Sw m - T ng Mo ver D ccess icatio Swi	works - Network del Instruction ethods: Report Pre ission Media - vitched Telephone The Local Loops -S Instruction ethods: Report Pre esign Issues- Error control sub layer -	Text Book 1 al Hours sentation 1 al Hours sentation	Chapters         1         12         3         12         3         5				
Unit I II III	Introduction Hardwa The I Communication Network Modem The I Detect The ch Blueto Switcling atewa	uction are - N Physic Inicati k - Str s - Wi Data 1 tion & hing: ays	Description  The Uses of Computer Network Software - Reference  Suggested Learnin  Cal Layer: Guided Tra on Satellites - The Public fucture of the telephone system  Teless Local loops  Suggested Learnin  Link Layer: Data Link Lay Correction. The medium act allocation problem. Bluetooth architecture - Appli Repeaters, Hubs, Bridges,	ng Mo ng Mo ansmi c Sw m - T ng Mo ver D ccess icatio Swi	works - Network del Instruction ethods: Report Pre ission Media - vitched Telephone The Local Loops -S Instruction ethods: Report Pre esign Issues- Error control sub layer - ons. Data Link Layer tches, routers, and Instruction	Text Book 1 al Hours sentation 1 al Hours sentation 1 al Hours	Chapters         1         12         2         3         12         2         5         12         5         12         13				
Unit I II III	Introduction Hardwa The I Communication Network Modem The I Detect The ch Blueto Switch gatewa	uction are - N Physic Inicati k - Str s - Wi Data I tion & hannel poth: I hing: ays	Description  The Uses of Computer Network Software - Reference  Suggested Learnin  Cal Layer: Guided Tra on Satellites - The Public fucture of the telephone system reless Local loops  Suggested Learnin  Link Layer: Data Link Lay Correction. The medium act allocation problem. Bluetooth architecture - Appli Repeaters, Hubs, Bridges,  Suggested Learnin  Suggested Learnin  Computer Suggested Lea	ng Mo ng Mo ansmi c Sw m - T ng Mo ver D ccess icatio Swi ning	works - Network del Instruction ethods: Report Pre ission Media - vitched Telephone 'he Local Loops -S Instruction ethods: Report Pre esign Issues- Error control sub layer - ons. Data Link Layer tches, routers, and Instruction Methods: Group D	Text Book 1 al Hours sentation 1 al Hours sentation 1 al Hours iscussion	Chapters         1         12         2         3         12         2         5         12         2         12         2         12         2         12         2         12         2         12         2         12         2				
Unit I	Introduction Hardwa The I Communic Network Modern The I Detect The ch Blueto Switch gatewa The Na algorith floodin The The the upp	uction are - N Physic Inicati k - Str s - Wi Data I tion & nannel Doth: I hing: ays etwor Ims - g - dis ransp- er lay	Description The Uses of Computer Network Software - Reference Suggested Learnin cal Layer: Guided Tra- on Satellites - The Public ucture of the telephone syste reless Local loops Suggested Learnin Link Layer: Data Link Layer Correction. The medium act allocation problem. Bluetooth architecture - Appli Repeaters, Hubs, Bridges, Suggested Learn K Layer: Network Layer I The Optimality principle stance vector routing - routing ort layer: The transport service ers, transport service primitiv	net e Moo ansmic c Sw m - T ng Mo ver D ccess icatio Swi ning Desig short g for ices - ves.	works - Network del Instruction ethods: Report Pre ission Media - /itched Telephone The Local Loops -S Instruction ethods: Report Pre esign Issues- Error control sub layer - ons. Data Link Layer tches, routers, and Instruction Methods: Group D n issues - Routing est path routing – mobile hosts. service provided to	Text Book 1 al Hours sentation 1 al Hours sentation 1 al Hours iscussion	Chapters         1         12         3         12         3         12         5         12         2         7				
Unit I	Introd Hardwa The I Commu Networl Modem The I Detect The ch Blueto Switcl gatewa The Na algorith floodin The Tu the upp	uction are - N Physic inicati k - Str s - Wi Data I tion & nannel oth: I hing: ays etwor ms - g - dis cansp- eer lay	Description A: The Uses of Computer Network Software - Reference Suggested Learnin cal Layer: Guided Tra on Satellites - The Public ucture of the telephone syste reless Local loops Suggested Learnin Link Layer: Data Link Laye Correction. The medium act allocation problem. Bluetooth architecture - Appli Repeaters, Hubs, Bridges, Suggested Learn Repeaters, Hubs, Bridgested Learn Repeaters, Hub	ng Ma ansmic c Sw m - T ng Ma ver D ccess icatio Swi Desig short g for ices - ves.	works - Network del Instruction ethods: Report Pre ission Media - vitched Telephone 'he Local Loops -S Instruction ethods: Report Pre esign Issues- Error control sub layer - ons. Data Link Layer tches, routers, and Instruction Methods: Group D n issues - Routing est path routing – mobile hosts. service provided to Instruction	Text Book 1 al Hours sentation 1 al Hours sentation 1 al Hours iscussion 1 al Hours	Chapters         1         12         2         3         12         2         5         12         2         7         12         12         12         12         12         12         12         12         12				

<b>V</b>	<b>The P</b> Electro <b>Netwo</b> DES - signatu	resenta nic Ma rk Se Public re - p	ation ail. Arc curity -key a ublic k	Layer chitectu : Cryj lgorith cey sig	: DNS ure and ptograj ims - l nature	5 - The d servic phy-Sy Digital s	e Dom ce the u ymmetri signatu	ain i ser a ic k ure -	Name Sy agent. Key algoi symmetr	stem - rithms, ric key	1	1(	)
									Inst	ruction	nal Hours	1	12
				Sı	iggest	ed Lea	rning l	Metl	hods: Vid	leo Pre	sentation		2
										То	tal Hours	(	50
Text Boo	oks		1	. Andr 4 <sup>th</sup> E	rew S 7 dition,	Fenenba 2012.	um, Co	mput	ter Networ	ks, Pea	rson Educa	tion pub	lication,
			1	. Behi	ouz A.	. Forou	zan, Soj	phia	Chung Feg	gan, <b>D</b> a	ta Comm	unicatio	ns and
				Netv	vorkin	g, McG	araw-Hi	ll Hig	gher Educa	tion, 3 <sup>r</sup>	<sup>d</sup> Edition,20	003.	
	_	_	2	V.S.	Bagad,	I.A.Dł	notre, <b>D</b>	ata (	- Communio	cation a	& Networl	<b>king</b> , Te	chnical
<b>Reference Books</b> 2. V.S.Bagad, I.A.Bhotte, Data Communication & Retworking, Technical Publication, 1 <sup>st</sup> Edition, 2010.													
	<b>3.</b> Achyut S Godbole AtulKahate Computer Communication												
				Net	works	Tata	McGra	wΗ	ill 4 <sup>th</sup> Ed	ition $2$	006 ES		
Web III			h		WUI KS								
web. Uf	ALS .		11	<u>ups://</u>	<u>www.</u>				<u>inputer-i</u>	letwor	<u>K-tutoria</u>		
				To	ols foi	r Asses	ssment	(50	Marks)				
CIA	Ι	CL	A II	C	IA III	D	Group iscussio	on	Assignm	ient s	Seminar	То	tal
8			8		10		8		8		8	5	0
						Ma	apping						
CO/PO	<b>PO1</b>	PO2	PO3	<b>PO4</b>	PO5	<b>PO6</b>	<b>PO7</b>	PO	8 PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	М	-	М	Μ	-	-	Μ	H	Μ	М	Н	Η
CO2	Μ	М	-	Μ	Μ	-	-	Μ	H	Μ	Μ	Н	Н
CO3	М	Н	-	-	Μ	-	Μ	Н	Μ	-	Н	-	Μ
CO4	Н	Н	-	Μ	Μ	-	Μ	Н	Н	Н	М	Н	Н
CO5	Н	Μ	-	-	Μ	-	Μ	Н	Μ	Μ	Н	Μ	Μ
H-High;	M-Me	dium; 1	L-Low										
	Course designed by Verified by												
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Title	

Course	rse Code Title											
22U3A	MP203		Core Paper VI: Pract	ical in	l in Java and Network Programming							
Semester: II			Credits: 4	CIA	: 50 Marks		ESE: 50 Marks					
			(B.Sc. Artificial Intelligen	ce and	l Machine Lear	rning	;)					
Course	Objecti	ve	To enable the students to ability in Java language.	develo	op problem solv	ving s	kills and programming					
Course	Catego	у	Skill Development /Employability/Entrepreneurship									
Develop	oment N	eeds	Global To make the students to understand the object oriented periodiam									
Course	Descrip	tion	design technique, syntax.									
Course	Outcom	les		1	Teaching Meth	nods	Assessment Methods					
CO 1	Develor string, conce	op pro array pts.	ograms to implement the and multiple inheritance	Prob Co	lem Based Teach nstructivist learni	Program Creativity						
CO 2	Implemented Implem	ment t tion ha orld p	he multithreading, andling concepts to solve roblems	Co	nstructivist learni Code Review	ng,	Debugging					
CO 3	Apply illustra	the cate reu	oncept of package to usability.	Co	nstructivist learni	ing	Application of Logic					
<b>CO 4</b>	Create	appli	cation for file handling.	Prob Co	lem Based Teach nstructivist learni	Program Development						
CO 5 Create Netw using Java I concepts			vorking Applications Network Programming	Problem Based Teaching, Constructivist learning			Program Development					
Offered	by Ar	tificia	al Intelligence and Machin	ne Lea	rning							
Course	Content	t			Inst	truct	ional Hours / Week: 4					
Unit			Lis	t of Pr	actical							
1	Write a string.	Java	Applications to extract a po	rtion o	f a character str	ing a	nd print the extracted					
2	Write a	Java j	program to insert an elemer	nt (spec	cific position) in	ito an	array.					
3	Write a	Java	Program to implement the c	concept	t of Interfaces.							
4	Write Ja	ava pr	ogram to implement overlo	ading	of methods.							
5	Write a	progr	am to implement the conce	pt of E	xception Handli	ing.						
6	Write ja	iva pro	ogram to demonstrate runting	me pol	ymorphism usir	ng ov	erriding.					
7	Write Ja	ava pr	ogram to add two matrices.									
8	Write a multipli	Java I catior	Program to implement the c tables and assign three dif	concept ferent	t of multithreadi priorities to ther	ing w n.	ith the use of any three					
9	Write a	Java	program to import classes f	rom us	er defined pack	age a	nd creating package.					
10	Write a	Java	program to process text file	•								
11	Write a Java Program to find the IP Address of the Machine											

## **B.Sc.**

12	Write a Java Program to implement TCP Protocol.														
13	Write a Java Program to illustrate the Local Loop in the network.														
14Write a JavaProgram to implement UDP Protocol.															
15 Write a Java Program to implement Stop and Wait Protocol															
Suggested Learning Methods: Solving Case studies, Peer tutoring and pair programming10												10			
											Τ	'ota	l Hours	6	<b>50</b>
	nt (50	M	arks)												
Application of Logic Creativity			e- P Det	rogran ouggin	n g	Test 1 Test 2		2	Observat ion Note Book		Total				
8			8		8		10	10				6	50		
						Ι	Mappin	g							
CO/PO	PO1	PO2	PO3	<b>PO4</b>	PO5	PO	6 PO7	/ PO	8	PSO1	PSC	)2	PSO3	PSO4	PSO5
CO1	Μ	М	-	Μ	М	1	-	Н		Μ	Н		Н	М	М
CO2	Μ	Н	-	Μ	Μ	-	Μ	H		М	Н		Μ	Н	М
CO3	Μ	Н	-	Μ	Μ	-	-	H		Η	Μ	_	М	Μ	Н
CO4	Н	Н	-	Μ	М	-	-	H		М	Н		Н	Н	М
CO5	Η	Η	-	Μ	Μ	-	-	H		Η	М		Н	Μ	Н
H-High; M-Medium; L-Low															
	(	Cours	e desig	ned b	y						Ver	rifie	ed by		

## B. Sc. CS, IT, DS, AIML, DCFS/ BCA

Course	Code		Title									
22U3M	IA202		Allied Paper II :	Discrete Mathe	mati	cs						
Semes	ter: II		Credits: 4 CIA		ESE: 50 Marks							
		(C	Common to B. Sc. CS / DS / IT / A	AIML / DCFS /	BCA	)						
Course	Objectiv	e	To learn about the Discrete Struc	cture for Compu	ter Ba	ased Application.						
Course	Category	y	Skill Development									
Develop	ment Ne	eds	Regional									
Course	Descript	ion	This course is to understand and use abstract discrete structures that are backbones of Computer Science. In particular, this course meant to introduce logic, proofs, sets, relations, functions, counting, and graph with an emphasis on applications in Computer Science									
Course	Outcom	es	· · ·	Teaching Methods		Assessme	ent Methods					
CO 1	Learn	the ba	sic concepts of Set theory	Lectures / P Teaching	eer	As	ssignment					
CO 2	Implem Logic i	nent th n Con	ne basic ideas of Mathematical nputer Science	Lectures Tutorial	/	S	eminar					
CO 3	Classify Function	y diffe ons	erent types of Relations and	Lectures / Vi Lectures	deo	Ass	signment					
CO 4	Infer th theory.	e con	cepts of Grammar and Automata	Lectures Tutorial	/	Wo	ork Sheet					
CO 5	Know	the co	oncepts of Graph theory	Lectures / Vi Lectures	deo	Quiz						
Offered												
Course	Content		Ι	nstructional H	ours	/ Week :	5					
Unit			Description			Text Book	Chapters					
I	I Set Theory: Introduction-Set & its Elements-Set Description- Types of sets-Venn-Euler Diagrams-Set operations & Laws of set theory. Fundamental products- Partitions of sets – Minsets- Algebra of sets and Duality-Inclusion and Exclusion Principle											
				Instruc	tiona	l Hours	15					
	Mother	nation	Suggested Learning Methods	S: Problem Solv		ractice	02 Hrs					
II	logical of & PCNF	1	12									
		l Hours	15									
			Suggested Le	arning Method	s: Cl	ass Test	02 Hrs					
ш	Relations: Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations.1Functions – Types of functions – Invertible functions – Composition of functions											
	<b>*</b>			Instruc	tiona	l Hours	15					

## B. Sc. CS, IT, DS, AIML, DCFS/ BCA

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Suggested Learning Methods: Assignments         02 Hrs													Hrs	
IV	Langua regular Gramm state m NDFA	Languages: Operations on languages – Regular Expressions and regular languages.Image: Construction-FiniteGrammar: Types of grammars – Grammar Construction-Finite1state machine –Finite State Automata- DFA- NDFA- Conversion of NDFA into DFA.1												.5
										Instru	iction	al Hours	1	5
			Sug	ggeste	d Lear	ning N	<b>Aetho</b>	ls: P	rol	blem So	olving	Practice	02 ]	Hrs
V	Graph Theory: Basic terminology – paths, cycle & ConnectivityV– Sub graphs – Types of graphs. Trees – Properties of trees – Binary trees-Traversal of Binary Trees.												9,	10
Instructional Hours 15													5	
			Sug	ggeste	d Lear	ning N	<b>Aethoo</b>	ls: P	rol	blem So	olving	Practice	02	Hrs
			1								Tota	al Hours	75	Hrs
Text Bo	oks		1.	J.K. 2005	Sharma 5.	, Discr	ete Ma	then	ıati	ics, Mac	millan	India Ltd, 2	2nd edit	ion,
Reference Books1. J. P. Tremblay, R. Manohar, Discrete Mathematics Structures with Applications to Computer Science, McGraw Hill International Edition, 2005.2. T.Veerarajan, Discrete Mathematics with Graph Theory and Combinatories, McGraw Hill International Edition, 2008										<b>h</b> ition,				
Web. U	RLs		<b>1.</b> 2.	<u>http</u> http	s://wwv s://you	w.youti tu.be/ty	ibe.com /DKR4	n/wa FG3	tch Yw	<u>v=oaU</u>	<u>m2pn</u>	<u>KKYY</u>		
				Too	ols for	Assess	sment	( <b>50</b> I	Ma	rks)				
CLA	A I	CL	A II	CL	A III	Ass	ignme	nt		Semina	ır	Quiz	To	otal
8			8	]	10		8		8 8			8	50	
						Maj	oping							
CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PC	)8	PSO1	PSO2	PSO3	PSO 4	PSO 5
C01														
CO2														
CO3														
CO4												_		
<u>CO5</u>		  · •	т											
H-High	M-Mec	num; L	L-LOW											
		Course	desig	ned by	7						Verif	ied by		