NHON TECHNOLOGICAL	140
GTA	IIIIIE
A Grone	ALL W
VIDISHA M.P.	4

(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

DEPARTMENT OF CS & IT

Semester/Ye	ear	VI/III		Pro	gram	B.Tech	n – Inte	rnet of	f Thin	gs				
Subject Category	DC	Subject Code:	ІоТ	2061	Subject Name	Automat	a and (Compi	iler De	esign				
	Maximum Marks Allotted Contact Hours Contact Hours													
	Th	neory			Practical	Total Contact Hours Cro Marks L T P								
ES	MS	Quiz/Assignme	ent	ES	LW	Marks	L	Т	Р					
70	20	10				100	3	0	0	3				
Prerequisite	es:													
Formal Lang	guages and	d Automata Theory.	Grapl	n Theor	rv.									
Course Obi	ective:	, j,			<u> </u>									
• Thi	s course	aims at introducin	g the	maior	concepts of 1	anguage trans	ation a	nd ph	ases o	f				
con	npiler, bes	sides the techniques	used i	n each	phase			F		-				
• The	e purpose	of this course is to a	cquai	nt the s	tudent with an	overview of th	e theore	tical f	ounda	tions of				
computer science from the perspective of formal languages.														
UNITS Descriptions Hrs.														
Introduction: Alphabets, Strings and Languages: Automata and Grammars.														
Introduction: Alphabets, Strings and Languages; Automata and Grammars, Deterministic finite Automata (DFA)-Formal Definition Simplified notation:														
I	Deterministic finite Automata (DFA)-Formal Definition, Simplified notation: State transition graph Transition table Language of DEA Nondotorministic													
1	finite Ar	itomata (NFA) Equ	ivaler	ince of I	NFA and DFA	Minimization	of Fini	te		0				
	Automat	ta. Regular Expressi	ons. A	rden's	theorem.	WinninZution	01 1 111							
	Compile	r Structure: Compi	lers a	nd Tra	nslators. Vario	us Phases of (Compile	er.						
	Symbol	Table management	Erroi	· Detec	tion and Reco	verv. Pass Str	ucture of	of						
П	Compile	r. Bootstrapping	of Co	ompile	. Lexical Ar	alvsis. The	Svntact	ic		8				
	Specification of Programming Languages: CFG, Chomsky hierarchy,									0				
	Derivation and Parse tree Ambiguity Canabilities of CFG													
	Basic Pa	arsing Techniques:	Top-	Down	parsers with b	acktracking. H	Recursiv	/e						
	Descent	Parsers, Predictive	Parser	s.	r · · · · · ·	8,				0				
111	Bottom-	-up Parsers, Shift-F	Reduce	Parsi	ng, Operator H	Precedence Par	sers, L	R		8				
	parsers (SLR, Canonical LR	, LAL	R) Syn	tax Analyzer C	Generator: YAC	CC.							
	Intermed	liate Code Generat	tion: 1	Differe	nt Intermediate	e forms: three	addre	SS						
	code, Q	uadruples & Tripl	es. S	yntax	Directed trans	lation mechan	ism ar	ıd						
IV	attribute	d definition. Transla	ation o	f Decla	aration, Assign	ment, and Con	trol flov	N,		8				
	Boolean	expression, Array	Refe	rences	in arithmetic	expressions, p	rocedu	re						
	calls, cas	se statements, postfi	x trans	slation.										
	Run Tim	ne Memory Manage	ment:	Static	and Dynamic s	storage allocati	on, stac	k						
	based me	emory allocation scl	hemes	•										
V	Code C	Optimization and	Code	Gen	eration: Loca	l optimization	n, Loc	р		8				
•	optimiza	tion, Peephole optin	nizatio	on, Bas	ic blocks and f	low graphs, D	AG, Da	ta		0				
	flow ana	alyzer, Machine M	odel, (Order of	of evaluation,	Register alloca	ation ar	ıd						
	code sele	ection.												
Total Hours	S								4	40				
Course Out	comes:													
CO1: Expla	in finite st	tate machines for m	odelin	g and t	heir power to re	ecognize the la	nguages	3.						
CO2: Under	rstand the	functionality of par	sing m	lechani	sms.									
CO3:Constr	uct syntax	x trees and generate	intern	nediate	code									
CO4: Under	rstand the	concepts of storage	admir	nistratio	on for different	programming	environ	ments	•					
CO5: Under	rstand the	concepts of optimiz	ation	and ger	nerate the mach	ine code								
Text Book														
1. Louder	n, "Compi	ler construction", C	engag	e learn	ing.									
Reference Books														
1. Alfred	V Aho, Je	effrey D. Ullman, "I	Princip	les of (Compiler Desig	gn", Narosa.								
2. A.V. A	ho, R. Set	thi and J.D Ullman.	"Com	piler: r	rinciple, Tech	niques and Too	ls", AW	7.						

- 3. Michal Sipser, "Theory of Computation", Cengage learning. □ H.C. Holub, "Compiler Design in C", Prentice Hall Inc.
- 4. Hopcroft, Ullman, "Introduction to Automata Theory, Languages and Computation", Pearson Education.
- 5. K.L.P. Mishra and N.Chandrasekaran, "Theory of Computer Science : Automata, Languages and Computation", PHI

List/Links of e-learning resource

• https://lipte1.ac.iii/courses/100103190

Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester practical examination.

CO-PO	Mapp	ing:												
COs	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO ₉	PO ₁	PO ₁₁	PO ₁₂	PSO1	PSO2
CO- 1	2	3	3	2	2							3	2	2
CO- 2	2	2	3	2								2		
CO- 3	2	2	3	2	1							2	2	2
CO- 4	3	3 3 1										1	2	
CO- 5	3	3	3	2	3									
Recomm	nendati	on by E	Board o	f studie	s on									
Approva	al by A	cademi	c cound	cil on										
Compiled and designed by														
Subject	handle	d by de	partme	nt				Depa	rtment	of CS &	& IT			



(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

DEPARTMENT OF CS & IT

Semester/Ye	ar	VI/III		Prog	gram	B.Tech – Internet of Things						
Subject Category	DE	Subject Code:	IoT 2062Subject(DE - 1A)Name			Introduction to IoT Development Boards						
		Maximum M	arks Al	lotted			Cont	oot U		Total		
Theory					Practical	Total	Cont		Jurs	Credits		
ES	MS	Quiz/Assignme	ent	ES	LW	Marks	L	Т	Р			
70	20	10		30	20	150	3	0	2	4		

Prerequisites:

Microprocessor and Microcontroller

Course Objective:

- To give students hands-on experience using different IoT architectures.
- To provide skills for interfacing sensors and actuators with different IoT architectures.
- To develop skills on data collection and logging in the cloud.

LINITS	Descriptions	Hrs
UNITS		111.5.
Ι	& Embedded Systems: Definition of System & Embedded System, Embedded Systems: Vs General Computing Systems, Architecture of Embedded Systems: Hardware & software, Design and Development Process, Classification, Major Application Areas, Purpose of Embedded Systems, Characteristics and Quality Attributes of Embedded Systems.	6
II	Introduction to Digital Sensor: Temperature, Gas, IR, Ultrasound, Soil Moisture, PIR Sensor, Sound Sensor, RGB LED, Photo resistor etc.	8
III	Arduino Uno – Getting started with the Uno boards, Pin Diagram and Architecture, programming and connection of sensors to the Uno board, reading values of sensors from the Uno board.	8
IV	ESP 8266-12E Node MCU – Getting started with the ESP board, Pin Diagram and architecture. Micropython and IDE, Flushing the ESP8266 board with micropython, connecting sensors to the ESP board and its programming. Connecting ESP board to WiFi, Interfacing ESP with the Cloud (REST APIGET, POST, MQTT).	10
V	Raspberry Pi - R-Pi introduction of the board, pin diagram, architecture and its features. R-Pi programming and Interfacing with different sensors.	8
Total Hour	c .	40

Course Outcomes:

CO 1: To know basics of development boards.

CO2: To know about the Arduino board and its interfacing with various components.

CO 3: To know about the ESP 8266 board and its interfacing with various components.

CO4: To know about the Raspberry Pi architecture. .

CO5: To know about the Raspberry Pi and its interfacing with various components.

Text Book

- 1. Dr. Jeeva Jose, Internet of Things, Khanna Publishing House
- 2. Rao, M. (2018). Internet of Things with Raspbery Pi 3: Leverage the power of Raspberry Pi 3 and JavaScript to build exciting IoT projects. Packt Publishing Ltd
- 3. Baichtal, J. (2013). Arduino for beginners: essential skills every maker needs. Pearson Education
- 4. Schwartz, M. (2016). Internet of Things with ESP8266. Packt Publishing Ltd.

Reference Books

1. Richardson, M., & Wallace, S. (2012). Getting started with raspberry PI. " O'Reilly Publisher

Media, Inc."

List/Links of e-learning resource

• https://onlinecourses.nptel.ac.in/noc20_ee98/preview

Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester practical examination.

CO-PO	Mappi	ing:												
COs	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO ₉	PO ₁	PO 11	PO 12	PSO1	PSO2
CO-1	2	1	2										1	2
CO-2	3	2	2	1									1	2
CO-3	3	2	2	1									2	1
CO-4	3	2	2	1									2	1
CO-5	2	2	1										1	1

Suggestive list of experiments:

1.IR OBSTACLE SENSOR- If object is detected pin 13 will go high (onboard LED ON) and "object detected" message will be displayed in serial monitor If object is not detected pin 13 will go low (onboard LED OFF) and "object not detected" message will be displayed in serial monitor.

2. GAS SENSOR- If Gas is detected pin 13 will go high (onboard LED ON) and "gas detected" message will be displayed in serial monitor If Gas is not detected pin 13 will go low (onboard LED OFF) and "gas not detected" message will be displayed in serial monitor.

3. FIRE SENSOR- If FIRE is detected pin 13 will go high (onboard LED ON) and "FIRE detected" message will be displayed in serial monitor If FIRE is not detected pin 13 will go low (onboard LED OFF) and "FIRE not detected" message will be displayed in serial monitor.

4. RELAY SHIELD- Controlling relay shield from serial monitor.

5. GSM SHIELD- If GAS is detected pin 7 will go LOW and "GAS detected" message will be sent to destination number.

6. Analog to Digital and PHOTORESISTOR- light-dependent resistor (LDR), the photo resistor adjusts its resistance according to the light received from the environment. It works not only with sunlight, but also with artificial light. Now lets see how we can integrate it to the real world. 7. Interfacing of DHT11.

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of CS & IT



(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

DEPARTMENT OF CS & IT

Semester/Ye	ear	VI/III		Pro	gram	B.Tecl	h – Inte	rnet o	<u>f Thin</u>	gs		
Subject Category	DE	Subject Code:	IoT (DE	2062 – 1B)	Subject Name	S	Soft Co	nputi	ng			
		Cont	a at II.		Total							
	Tł	neory			Practical	Total	Com		burs	Credits		
ES	MS	Quiz/Assignme	ent	ES	LW	Marks	L	T	P			
70	20	10		30	20	150	3	0	2	4		
Proroquisit	05.											
NA	63.											
Course Obj	jective:											
Devel	evelop the skills to gain a basic understanding of neural network theory and fuzz											
• Introd	Introduce students to artificial neural networks and fuzzy theory from an engineer											
UNITs			Hrs.									
	Soft C	g										
	vs. har	s,										
	applica	d										
.	Function of a single neuron: Biological neuron, artificial neuron.									0		
1	Function of a single neuron: Biological neuron, artificial neuron, Difference and characteristics and applications of ANN									8		
	Evoluti	Difference and characteristics and applications of ANN, Evolution of Neural Networks, Basic Models of Artificial Neural										
	Network, Important Terminologies of ANNs. McCulloch-Pitts											
	Neuron model. Widrow & Hebbs learning rule/Delta rule.											
	Supervised Learning Network Introduction, Perception Networks											
	Back-Propagation Network, Radial Basis Function Network. Time											
т	Delay	Neural Network	Sing	le lay	er network,	Perceptron	trainin	g	8			
11	algorith	hm, Linear se	parab	oility,	, ADALI	NE, MAD	ALINI	Ē.	8			
	Introdu	uction of MLP,	Error	^b ack	propagation	n algorithm	and i	ts				
	applica	ations										
	Unsupe	ervised Learning	g Net	twork	s Introduct	tion, Fixed	Weigl	nt				
	Compe	etitive Nets, Ko	ohone	en Se	lf-Organizin	g Maps, A	daptiv	'e				
	Resona	ance Theory (AF	RT 1,	ART	2): Architect	ture, classifi	cation	s,				
ш	Implen	nentation and	traini	ing (Counter pro	pagation n	etwor	κ,		8		
	archite	cture, functionin	g & 0	charac	cteristics of a	counter Prop	oagatio	n		0		
	networ	k, Hopfield/ Re	ecurre	ent ne	etwork, con	figuration,	stabili	y				
	constra	unts, associative	mem	ory, I	Hopfield v/s	Boltzman n	nachin	э.				
	Associ	ative Memory.										
	Fuzzy 1	Logic: Fuzzy set	theor	ry, Fu	zzy set versu	is crisp set,	Crisp o	Ŷ				
	fuzzy	relations, Fuzz	y sy	stems	: crisp log	ic, fuzzy	logic,	,				
	Predica	ate Logic, introdu	uction	1 & fe	atures of me	mbership fu	nction	s,				
IV	Fuzzy rule base system: Defuzzification Methods, Fuzzification									8		
	,fuzzy	propositions, to	rmatı	on, d	ecomposition	n & aggrega	ation of)İ				
	fuzzy	rules, fuzzy rea	asoni	ng, ti	uzzy interer	ice systems	, fuzz	У				
	dec1s10	on making & App	olicati	ions o	I IUZZY logic		гт• /					
T 7	Genetic	c algorithm : Fur	idame	entals	of Genetic A	Algorithms	Histor	у,		0		
V	Basic	Concepts, Crea) 10	лтsprings,	working Pi	inciple	÷,		ð		
	WORK11	g principle, ei	ncodi	ng. t	itness func	tion. repro	auctio	l.				

-														
	d C	eletior convergent	mode mode mode mode gence	elling: ation of GA	Inher operate A, App	itance or, Bit licatio	operativise operations &	ator, croperato advano dition	ross o or, Gen ces in	ver, ir neratic GA, I bod	onal Cy Differer	n & vcle, nces		
Total F	Jours	511111	anties	Detwo		4 a 01		union	ai mei	nou.				0
Course Outcomes: 40														
CO.1.	Descri	he neur	ral net	vork 1	ist the	model	s of NI	V and	relate t	hem				
CO_{-2}	Discus	s perce	ntion	hack n	ronage	tion ne	etwork	s and e	vnlain	MIP	its annl	ication	2	
CO-2.	Illustra	s perce	ption, ut arch	itectur	e class	ificati	on fun	s and c	a and	charac	teristics	of net	vork	
CO-3	Comp	re auto	at aren	itectury	oic fu		on, run		ig and	nnlica	tions	of net	NOIK	
CO-4.	Design	ue, exp	ic algo	izzy 10 rithme	applic, Iu	LLy Sys	stems c	x calleg	;onze a	приса	uons			
Toyt B	Design	genet	ic algo.	minis	appire	ations								
1 N	ourol	Noture	rela E	haan	logia	and (Conati		ortibre		nthonia	and	Applia	otiona
1. IN		INELWO	лк, г С л т	uzzy	logic,		Jeneti	c Alg	orunn	is Sy	littlesis	anu	Applie	ations,
<u> </u>	Rajser	, karan	G.A V	ijayai	aksnn	nPai								
Kefere	nce Boo	OKS	1 4	0	1	• •	- 1	,	<u> </u>		<u>, a.</u>		1 · D	
I. N	eural I	Netwo	rks: A	Com	preher	isive I	Found	ation (2nd E	dition), Simo	on Hay	kin, P	rentice
H	all.													
2. E	lement	s of a	rtificia	al neu	iral ne	etwork	s by i	Kishaı	n Meh	rotra,	Chilul	curi K	. Moha	an and
Sa	anjay F	Ranka.												
3. N	Veural	netwo	rks and	d fuzz	y syste	ems by	y Bart	Kosko	o, Prer	tice H	all of I	ndia.		
4. Fu	undam	entals	of arti	ficial	neural	netwo	orks b	v Moh	amma	d H. F	Hassour	n. Pren	tice Ha	all
of	f India.											,		
List/Li	nks of e	-learni	ng reso	urce										
•	https:/	/archive	e.nptel.a	ac.in/co	ourses/1	06/105	/10610	5173/						
Modes	of Eval	uation	and Ru	ıbric										
The eva	aluation	modes	consis	t of per	rformar	nce in t	wo mic	1 semes	ter Tes	ts, Qui	z/Assign	nments,	term wo	ork, end
semeste	er practi	cal exar	ninatio	n.										
CO-PC) Mapp	ing:												
COs	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO ₉	PO ₁	PO ₁₁	PO ₁₂	PSO1	PSO2
CO-1	2	1	2										1	2
CO-2	3	2	2	1									1	2
CO-3	3	1	2	1									1	2
CO-4	3	1	2	1										2
CO-5	2	2	1										1	2
Sugges	tive list	of expe	erimen	ts:			•	•						
1.	Creat	e a pe	rceptro	on wit	h appr	opriat	e num	ber of	input	s and o	outputs	. Train	it usin	g
	fixed	increr	nent le	earnin	o alon	rithm	until r	o cha	nge in	weigh	ts is re	anired	Outpu	o at the
	final	weigh	te	our min,	5 m 50			io ciia	inge m	Weight		quirea	. ourp	*** 1110
2	Write	weigii	arom 1	o imp	lomon	t ortifi	icial n	ourol r	otwor	le mith	out ha	ale n rai	agatio	
۷.	2. Write a program to implement artificial neural network without back propagation.													
	Write a program to implement artificial neural network with back propagation.													
3.	Imple	ement	Union	, Inter	sect10	n, Coi	nplem	ient an	d Diff	erence	e opera	tions o	n fuzz	y sets.
	Also	create	fuzzy	relati	on by	Cartes	sian pr	oduct	of any	^r two f	uzzy se	ets and	perfor	m

- max-min composition on any two fuzzy relations. 4. Implement travelling sales person problem (tsp) using genetic algorithms.
- 5. Plot the correlation plot on dataset and visualize giving an overview of relationships among data on soya bins data. Analysis of covariance: variance (ANOVA), if data have categorical variables on iris data.
- 6. Implement linear regression and multi-regression for a set of data points
- 7. Implement crisp partitions for real-life iris dataset
- 8. Write a program to implement Hebb's rule Write a program to implement Delta rule.
 9. Write a program to implement logic gates.
- 10. Implement svm classification by fuzzy concepts.

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of CS & IT



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

DEPARTMENT OF CS & IT

Semester/	Year	VI/III		Pro	gram	B.Tech	ı – Inte	rnet of	f Thin	gs	
Subject Category	t y DE Subject Code: IoT 2063 (DE – 2A) Name Web Engineering										
		Maximum M	arks A	llotted		1	Cont	act He	ours	Total	
]	Theory			Practical	Total			Jui 5	Credits	
ES	MS	Quiz/Assignme	ent	ES		Marks			P		
70	20	10		30	20	150	3	0	2	4	
D	• /										
Prerequis	ites:										
Course O	hiaatiwa										
Lund	ojective:	a abanastanistica of	wah (malia	tions						
• Unde			web a	аррпса	luons						
• Lear	n to Mod	el web applications									
• Be a	ware of S	systematic methods									
• Be fa	amiliar w	ith the testing techr	iques	for we	eb application	IS					
UNITs				Dese	criptions					Hrs.	
	Introd	uction To Web	Engi	neeri	ng And Re	auirements	Eng	ineer	ing.		
	Motiva	tion Categories	of	Neb	Applications	Character	istics	of V	Web		
	Applie	ations Produc	t_rela	ted	Characteri	stics Us	age	rel	ated		
	Charac	toristics Develop	2000	t rolat	ad Character	stics, Oc	lution	of	woh		
Ι	Charac	\mathbf{D}		l-ICIAL		$\frac{115}{11}$	iution	01 :	Web	8	
	enginee	ering – Requirem	ents I	Engin	eering Activ	ities RE Sp	ecifics	; in v	Neb		
	Engine	ering, Principles	tor	RE	of Web A	pplications,	Adap	ting	RE		
	Methods to Web Application Development, Requirement Types,										
	Notatio	ons, Tools									
	Web	Application	Aı	chite	ctures &	& Mode	elling	V	Veb		
	Applic	ations:									
	Introdu	ction- Categorizi	ng A	rchite	ctures, Spec	cifics of We	eb Ar	plica	tion		
	Archite	ctures. Compone	nts o	faG	eneric Web	Application	n Arc	hitect	ure.		
	Lavered	d Architectures 2	-Lave	er Arc	hitectures. N	I-Laver Arch	nitectu	res D)ata-		
II	aspect	Architectures [)ataha	se-ce	ntric Archit	ectures Ar	chitec	tures	for	8	
	Web	Document Man	arem	ont	Architecture	s for Mu	ltimed	ia I	Jata		
	Modeli	ng Specifics in	ugenik Wa	h D.	Aichitecture	Lovela A	nnicu	Dh			
	Creater	lig specifics in			ignieering,	Levels, As	species	, P116 1	ases		
	Custon	inzation, Modelin	g Re	quirei	nents, Hype	riext Model	ing, r	Typer	text		
	Structu	re Modeling Cond	cepts.								
	Web A	Application Des	sign			-	_				
	Introdu	ction, Web Desig	gn fro	m an	Evolutionar	y Perspectiv	ve, Inf	orma	tion		
	Design	, Software Desigi	n: A]	Progra	amming Act	ivity, Mergi	ng Inf	orma	tion		
	Design	and Software De	sign,	Probl	ems and Res	strictions in I	Integra	ated V	Web		
	Design	, A Proposed	Str	uctura	l Approac	h, Presenta	ation	Des	ign,		
III	Present	ation of Nodes	and	Mesh	es. Device-i	independent	Deve	lopm	ient.	8	
	Approa	ches. Inter act	ion	Desig	n. User Ir	nteraction I	Jser	Inter	face		
	Organiz	zation Navigatio	n D	esion	Designing	a Link	Renree	entat	ion		
	Decian	ing I ink Internal	s No	vigati	on and Origina	ntation Str	ncture	d Di	alog		
	for Co	mploy Activition	3, INA Int	arnlar	with Task	maion, su		u Dié	alog		
		mplex Activities	, into	erpiay	with Tech	mology and	I AIC	meet	ure,		
	Functio	onal Design.									

	TE	STIN	G W	EB A	PPLI	CATI	ONS							
	Introduction, Fundamentals, Terminology, Quality Characteristics, Test													
	Ob	jectiv	es, Te	est Le	evels,	Role	of th	e Te	ster, 7	Test S	Specific	cs in	Web	
	En	gineer	ing,	Test	App	roach	es, C	Conve	ntional	Ap	proach	ies, A	Agile	
IV	Ap	proac	hes, T	est Sc	heme,	Thre	e Test	Dime	ensions	s, App	lying t	he Sch	ieme	8
	to	Web	Appl	icatio	ns, To	est M	lethod	s and	Tech	nique	es, Lin	k Tes	ting,	
	Bro	owser	Testir	ng, Us	ability	Testi	ng, Lo	oad, St	tress, a	and Co	ontinuc	us Tes	ting,	
	Tes	sting S	Securit	ty, Tes	st-driv	en De	velopr	nent, '	Test A	utoma	tion, E	Benefits	and	
	Dra	awbac	ks of A	Autom	nated 7	Fest, T	Test To	ols.						
	W	EB P	ROJE	CT N	ANA	GEN	IENT							
	Un	dersta	nding	Scop	e, Ret	fining	Fram	ework	Activ	vities,	Build	ing a	Web	
V	Tea	am, I	Manag	ing F	Risk,	Devel	loping	a S	chedu	le, M	anagin	g Qua	ality,	8
	Ma	nagin	g Cha	inge, [Fracki	ng the	e Proje	ect. In	troduc	tion t	o node	e JS –	web	
	soc	kets.	-	-		•	Ū							
Total H	ours													40
Course Outcomes:														
CO-1: Understand and apply the characteristics of web applications by requirements engineer											gineerii	ng.		
CO-2: Categorizing web architecture and model web applications.														
CO-3:	CO-3: Design and development of web applications.													
CO-4:	CO-5: Scope and utility of web project management													
CO-5:	Text Book													
1 Gorti	1 Gerti Kappel, Birgit Proll, "Web Engineering" John Wiley and Sons Ltd													
Reference Books														
1. Roger S. Pressman, David Lowe, "Web Engineering". Tata McGraw Hill Publication											n			
2. Guy W. Lecky-Thompson, "Web Programming". Cengage Learning.														
3. Chris Bates, "Web Programming: Building Internet Applications". Third Edition W											ilev			
India Edition											ney			
1 John	n Paul	Muel	ler "V	Veh D	evelor	ment	with N	Aicros	oft Vi	sual S	tudio 2	005" 1	Vilev	Dream
Tec	h naur	Widei	ici, v		evelop	ment	with r	viici 05		suul D	tuulo 2	, ,	willey .	Dicam
List/Lin	ks of e	-learni	ng reso	urce										
•	https://	/nptel.a	c.in/co	urses/10)61050	84								
Modes of	of Eval	uation	and Ru	ıbric										
The eva	luation	modes	consis	t of pe	rformar	nce in t	wo mic	l semes	ster Tes	ts, Qui	z/Assigr	ments,	term wo	ork, end
semester	r practi	cal exa	minatio	n	_	_	_	_	_	_			_	
CO-PO	Mappi	ng:	DO	DO	DO	DO	DO	DO	DO	DO	DO	DO	DCO1	DGO2
COs	PO1 2	PO ₂	PO3	PO ₄	PO5	PU ₆	PO7	PU ₈	PU9	PO ₁	PO ₁₁	PO ₁₂	1 PS01	PS02
CO-1 CO-2	2	1	2	1									1	2
CO-3	3	2	2	1									1	2
CO-4	3	2	2	1									1	2
CO-5	2	2	1	1									1	2
Suggest	ive list	of exp	erimen	ts:		I		I			I			
1. Design the following static web pages required for an online book store web site. 1) HOME														
PA	GE: T	he stat	tic hom	ne page	must	contai	n three	frames	s. 2) LO) GIN I	PAGE 3	3) CAT	OLOGI	UE
PA	GE: T	he cat	alogue	page s	hould	contair	n the de	etails o	f all th	e book	s availa	ble in tl	ne web	site in
a t	able. 4) REG	ISTRA	TION	PAGE]								
2. W	rite Jav	aScrit	ot to va	lidate t	the foll	owing	fields	of the	Registr	ation r	bage. 1.	First N	ame (N	lame
she	ould co	ontains	alphał	bets an	d the le	ength s	hould	not be	less that	n 6 ch	aracter	s). 2. Pa	ssword	L I
(Pa	asswor	d shou	ld not	be less	than 6	chara	cters le	ngth).	3. E-m	ail id (should	not con	tain an	y
inv	alid a	nd mus	st follo	w the s	tandar	d patte	rn nam	ne@do	main.co	om) 4.	Mobile	Numbe	er (Pho	ne
nu	mber s	hould	<u>co</u> ntair	n 10 di	gits on	ly). 5.	Last N	ame ar	nd Add	ress (sl	hould n	ot be Ei	npty).	

- 3. Develop and demonstrate the usage of inline, internal and external style sheet using CSS
- 4. Develop and demonstrate JavaScript with POP-UP boxes and functions for the following problems: a) Input: Click on Display Date button using onclick() function Output: Display date in the textbox b) Input: A number n obtained using prompt Output: Factorial of n number using alert c) Input: A number n obtained using prompt Output: A multiplication table of numbers from 1 to 10 of n using alert d) Input: A number n obtained using prompt and add another number using confirm Output: Sum of the entire n numbers using alert
- 5. Write an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next in the list. Add CSS to customize the properties of the font of the capital (color, bold and font size).
- 6. Write an HTML page including any required JavaScript that takes a number from text field in the range of 0 to 999 and shows it in words. It should not accept four and above digits, alphabets and special characters.
- 7. Develop and demonstrate PHP Script for the following problems: a) Write a PHP Script to find out the Sum of the Individual Digits. b) Write a PHP Script to check whether the given number is Palindrome or not
- 8. Create an XML document that contains 10 users information. Write a Java Program, which takes User Id as input and returns the user details by taking the user information from XML document using DOM parser or SAX parser.

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of CS & IT

SHON TECHNOLOGICAL		SAMRAT	ASI	HOK	TECHNO	LOGICAI	INS	TT	UTE	
GTA		(F	Ingin	leerin	g College)	, VIDISHA	M.P.			
Nu Conte	and the second s	(An	Auton	omous	Institute Affi	/ liated to RGP	V Bhop	al)		
VIDISHA M.P.	1		DF	PAR	TMENT	OF CS &	IT Î			
Semester/Ye	ar	VI/III		Pro	oram	B.Tecl	– – h – Inter	net o	f Thin	σς
Subject	DE	Subject Code:	IoT (DE	2063	Subject	Co	mputer	Graj	ohics	55
Category		Maximum M	arks A	– 2B) Allotted	Name		-			Total
	Т	heory			Practical	Total	Cont	act H	ours	Credits
ES	MS	Quiz/Assignme	ent	ES	LW	Marks	L	T	P	
70	20	10		30	20	150	3	0	2	4
Proroquisit	ac •									
Basic Kno	wledge	of Matrix 2-dim	ensic	nal &	3-dimensio	nal concents				
Course Obi	ective.				5-uniciisio	nai concepts	•			
• Under	stand th	e basic concepts of	comr	niter of	aphics and it	s applications	2			
	and and	lyze the algorithm	to di	ow gro	apines and h	primitivos				
• Apply	and and	$a_{2} = a_{2} = a_{2$	s to ui	aw gia	ipines output	prinnives.				
Apply	and cre	ale 2-D & 3-D tran	storm		on various ob	jects.			T	r
UNIIS	D '		1 ·	Jescrip	tions		1 .		H	lrs.
	Basic	of Computer Gr	aphics	s, App	olications of	computer g	graphic	8,		
т	Displa	y devices, Cathod	e Ray	· Lube	, quality of	phosphors, C	CRIS IC	or st		0
1	Viow 9	Storago Tubo I El	and	I C R I	Graphics in	v - Mask CK	I, Dileo Granhio			0
	softwa	re and standards	Janu	LCD.	Graphics in	put devices,	orapine	.5		
	Output	nrimitives attrib	utes c	of outp	ut primitives	point and li	ne style	2		
	color	and intensity A	ea fi	lling <i>i</i>	algorithms	Scan line al	gorithn	, 1		
П	bounda	arv fill & flood	fill a	lgorith	m. Antialias	ing techniqu	es. Lin	e		8
	drawin	g- various algorit	nms a	nd the	ir compariso	n, circle gen	eration	-		-
	Bresen	ham's midpoint ci	rcle dı	awing	algorithm.	, 6				
	Transf	ormation- Basic	Trans	formati	ions, Matrix	Representat	ion an	d		
	Homog	geneous Coordina	tes, t	ranslat	ion, scaling,	rotation, re	eflection	ı,		
III	sheerin	ng, composite	transf	ormati	on, Windo	w to vie	w po	rt		8
	transfo	ormation, line clip	ping	algorit	thm; Cohen	Sutherland,	polygo	n		
	clippin	g; Sutherland Hod	gman	algorit	hm.					
	Need	tor 3-Dimension	al in	naging	, technique	s for 3-Di	mesion	al		
	display	ing, 3D transfor	matio	n, pro	jection and	its types,	Curve	-		
IV	parame	etric and non-	param	Selies	runctions,	Bezier (F	Sernstei	n		8
	Polyno	romoval Back	face	-Spine dotoc	s, D-Spines	s, need for	Deinter	п 'о		
	algorit	hm	lace	uciec		er methou,	I annei	5		
	Shadin	ng Algorithms-Ph	ong's	shad	ing model	Gouraud	shading	7		
	Shadoy	ws and backgrou	nd. il	lumina	nig niodel,	sources, illu	minatio	n		
V	method	ds (ambient, diffus	e refle	ction.	specular refle	ection). Color	model	s:		8
	proper	ties of light, XYZ,	RGB,	YIQ a	nd CMY col	or models.				
Total Hour	s i	0							4	40
Course Out	comes:									
СО-1 : То и	indersta	nd the Graphics sy	stems	, its ap	plications, ha	rdware & sof	tware r	equir	emen	t.
СО-2: То	apply s	can conversion alg	orithn	ns of va	arious graphi	cs output prin	nitives.		-	
СО-3: То	understa	and the basic princ	ples	of hon	nogeneous co	pordinate syst	tems, 2	-dim	ensio	nal & 3-
dimensiona	u compu	iter graphics system	ns.	n on 7	dimonsions1	& 2 dimonsi	onalat	acto		

CO-5: To apply window into viewport, clipping algorithms of graphics objects against a window. **Text Book**

1. Computer Graphics C Version, Donald Hearn & M. Pauline Baker, Pearson Education, New Delhi.

Reference Books

- 1. James D. Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes, Computer Graphics- Principles and practice, Second Edition in C, Pearson Education.
- 2. OpenGL ES 3.0 Programming Guide 2nd Edition (English, Paperback, Budi Rijanto Purnomo, Dan Ginsburg), PEARSON.
- 3. Rogers, "Procedural elements of Computer Graphics", Tata McGraw Hill.
- 4. Parekh, "Principles if multimedia", Tata McGraw Hill.

List/Links of e-learning resource

• https://nptel.ac.in/courses/106106090

Modes of Evaluation and Rubric

The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester practical examination.

CO-PO	Mapp	ing:	
	DO	-	Г

COs	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO ₉	PO ₁	PO 11	PO 12	PSO1	PSO2
CO- 1	1	3		2									1	2
CO- 2	2	2											1	2
CO- 3	2	3	1										2	1
CO- 4	1	2											1	3
CO- 5	3	1		1									2	2

Suggestive list of experiments:

1. Implement Brenham's line drawing algorithm for all types of slope

- 2. Create and rotate a triangle about the origin and a fixed point.
- 3. Draw a color cube and spin it using OpenGL transformation matrices.
- 4. Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing
- 5. Clip a lines using Cohen-Sutherland algorithm.
- 6. To draw a simple shaded scene consisting of a tea pot on a table. Define suitably the position and properties of the light source along with the properties of the surfaces of the solid object used in the scene
- 7. Design, develop and implement recursively subdivide a tetrahedron to form 3D sierpinskigasket. The number of recursive steps is to be specified by the user.
- 8. Develop a menu driven program to animate a flag using Bezier Curve algorithm
- 9. Develop a menu driven program to fill the polygon using scan line algorithm

Recommendation by Board of studies on	
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Department of CS & IT

TECHNOLOGY	A MARKEN AND A MARKAN	SAMRAT (E (An J	ASI Angir Auton	HOK neerir omous	TECHNO ng College) Institute Affil TMFNT	LOGICAL VIDISHA iated to RGP	, INS M.P V Bhog IT	FITU • pal)	U TE		
Semester/	Zear	VI/III		Pro	gram	B.Tech	L L 1 – Inte	rnet o	f Thin	IS	
Subject	DE	Subject Code:	ІоТ	2064	Subject	Cloud		uting	for Io	<u>ъ</u>	
Category		Maximum M	(DE arks /	<u>– 3A)</u> Allotted	Name					- Total	
	Т	heory			Practical	Total	Cont	act H	ours	Credits	
ES	MS	Quiz/Assignme	ent	ES	LW	Marks	L	T	P	<u> </u>	
70	20	10		30	20	150	3	0	2	4	
Proroquis	itos.										
Knowled	ge of Co	mputer network	Inter	net Te	chnology an	d ACA					
Course O	biective:	inputer network,	men		chilology an	unen.					
To le	arn how t	o use Cloud Servio	ces.								
• To in	nplement	Virtualization									
• To in	nplement	Task Scheduling algorithms.									
Appl	v Man-Re	duce concept to applications									
• To b	uild Private Cloud										
 Broadly educate to know the impact of engineering on legal and societal issues involved 											
	UNITs Descriptions									Hrs	
UNITS	Definin	g a Cloud Clou	d T	mag	NIST mod	lal Cloud (Jubo	mode	1	1115.	
Ι	Defining a Cloud, Cloud Types – NIST model, Cloud Cube model, Deployment models (Public , Private, Hybrid and Community Clouds), Service models – Infrastructure as a Service, Platform as a Service, Software as a Service with examples of services/ service providers, Cloud Reference model Characteristics of Cloud Computing – a shift in paradigm Benefits and advantages of Cloud Computing Architecture ,Infrastructure, Platforms, Virtual Appliances, Communication Protocols, Applications, Connecting to the Cloud by Clients Services and Applications by Type IaaS – Basic concept, Workload, partitioning of virtual private server instances, Pods, aggregations, silos PaaS – Basic concept, tools and development environment with examples SaaS – Basic concept										
П	Concepts of Abstraction and Virtualization (access, application, CPU, storage), Mobility patterns (P2V, V2V, V2P, P2P, D2C, C2C, C2D, D2D) Load Balancing and Virtualization ,Network resources for load balancing, Advanced load balancing (including Application Delivery Controller and Application Delivery Network), Mention of The Google Cloud as an example of use of load balancing Hypervisors: Virtual machine technology and types, VMware vSphere Machine Imaging (including mention of Open Virtualization Format – OVF).Distinction between SaaS and PaaS (knowledge of Salesforce.com and Force.com), Application development Use of PaaS										
III	Applica Applica	tion framework	s I Inde	Use of exed s	of Google Search Dark	Web Servio Web Ago	ces , (regatio	Goog on an	le	8	

	disintermediation, Productivity applications and service, Adwords,	
	Google Analytics, Google Translate, Google Toolkit (including	
	introduction of Google APIs), major features of Google App Engine	
	service. Use of Amazon Web Services Amazon Web Service	
	components and services: Amazon Elastic Cloud, Amazon Simple	
	Storage system, Amazon Elastic Block Store.	
	Windows Azure platform: Microsoft's approach, architecture, and main	
	elements, Windows Azure AppFabric, Content Delivery Network, SQL	
	Azure, and Windows Live services, Types of services required in	
	implementation – Consulting, Configuration, Customization and Support	
TT 7	Cloud Management.	0
1V	An overview of the features of network management systems and a	8
	brief introduction of related products from large cloud vendors,	
	Monitoring of an entire cloud computing deployment stack – an	
	overview with mention of some products, Lifecycle management of	
	cloud services (six stages of lifecycle).	
	Cloud security concerns, Security boundary, Security service boundary	
	Security of data, Brokered cloud storage access, Storage location and	
	tenancy, encryption, and auditing and compliance Identity management.	
	Service Oriented Architecture, message-based transactions, Protocol	
	stack for an SOA architecture, Event-driven SOA, Enterprise Service	
V	Bus, Concepts of cloud transactions, functionality mapping, Application	8
	attributes, Cloud service attributes, System abstraction and Cloud	
	Bursting, Applications and Cloud APIs, Cloud storage definition –	
	Manned and Unmanned, Cloud mail services including Google Gmail,	
	Mail2Web, Windows Live Hotmail, Yahoo mail, concepts of	
	Syndication services.	
Total Hou	irs	40
Course O	utcomes:	
CO-1: Ex	cplain the core concepts of the cloud computing paradigm: how and why this parad	ligm shift
came abo	ut, the characteristics, advantages and challenges brought about by the various mod	dels and
services 1	n cloud computing.	ious load
balancing	escribe importance of virtualization along with their technologies and compare var	Tous Toad
CO-3. D	, argonum. escribe and analyze the key components of Google and Amazon web service and a	nnly them
to solve r	problems on the cloud.	ippiy mem
CO-4: D	escribe the key components of Microsoft azure platform and cloud management on	n azure.
CO-5. E		1 1.1 .1
CO-3. E	splain major security and privacy problems in the cloud and how they are addresse	ed with the
security r	rechanisms	ed with the
security r	rechanisms	ed with the
security r Text Bool 1. Cloud	c Computing – Second Edition by Dr. Kumar Saurabh, Wiley India	ed with the
security r Text Bool 1. Cloud Reference	Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books	ed with the
security r Text Bool 1. Cloud Reference 1. Cloud	Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 ring Cloud Computing hy Poilumer During Christian Machinels, S. Thema	ed with the
security r Text Bool 1. Cloud Reference 1. Cloud 2. Master Maco	Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books I Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 ering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S. Thama	arai Selvi,
security r Text Bool 1. Cloud Reference 1. Cloud 2. Master McGr	Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books I Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 ering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S. Thama will Education (India) Private Limited, 2013	arai Selvi,
security r Text Bool 1. Cloud Reference 1. Cloud 2. Master McGr 3. Cloud	Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books I Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 pring Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S. Thama will Education (India) Private Limited, 2013 I computing: A practical approach, Anthony T. Velte, Tata Mcgraw-Hill	arai Selvi,
security r Text Bool 1. Cloud Reference 1. Cloud 2. Master McGr 3. Cloud 4. Cloud 5. Divid	Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 ering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S. Thama raw Hill Education (India) Private Limited, 2013 I computing: A practical approach, Anthony T. Velte, Tata Mcgraw-Hill Computing, Miller, Pearson ing applications in aloud: Concept. Batterna and Brainata, Maryan Buyya, Christian Vecchiola, S. Thama	arai Selvi,
security r Text Bool 1. Cloud Reference 1. Cloud 2. Master McGri 3. Cloud 4. Cloud 5. Build	Kellan major security and privacy problems in the cloud and how they are addressed nechanisms Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books I Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 ering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S. Thama aw Hill Education (India) Private Limited, 2013 I computing: A practical approach, Anthony T. Velte, Tata Mcgraw-Hill I Computing, Miller, Pearson ing applications in cloud: Concept, Patterns and Projects, Moyer, Pearson	arai Selvi,
security r Text Bool 1. Cloud Reference 1. Cloud 2. Master McGr 3. Cloud 5. Build List/Links	Kellan major security and privacy problems in the cloud and how they are addressed nechanisms Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books I Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 ering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S. Thama raw Hill Education (India) Private Limited, 2013 I computing: A practical approach, Anthony T. Velte, Tata Mcgraw-Hill I Computing, Miller, Pearson ing applications in cloud: Concept, Patterns and Projects, Moyer, Pearson s of e-learning resource ttps://archive.nptel.ac.in/courses/106/105/106105167/	arai Selvi,
 security r rext Bool 1. Cloud Reference 1. Cloud 2. Master McGri 3. Cloud 4. Cloud 5. Build List/Links h Modes of 	Computing – Second Edition by Dr. Kumar Saurabh, Wiley India Books Computing Bible by Barrie Sosinsky, Wiley India Pvt. Ltd, 2013 ering Cloud Computing by Rajkumar Buyya, Christian Vecchiola, S. Thama aw Hill Education (India) Private Limited, 2013 l computing: A practical approach, Anthony T. Velte, Tata Mcgraw-Hill l Computing, Miller, Pearson ing applications in cloud: Concept, Patterns and Projects, Moyer, Pearson s of e-learning resource ttps://archive.nptel.ac.in/courses/106/105/106105167/ Evaluation and Rubric	arai Selvi,

semester practical examination.														
CO-PO	Mappi	ing:												
COs	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO ₉	PO ₁	PO ₁₁	PO ₁₂	PSO1	PSO2
CO-1	2	1	2										1	2
CO-2	3	2	2	1									2	1
CO-3	3	2	2	1									2	1
CO-4	3	2	2	1									2	1
CO-5 2 2 1							1	2						
Suggest	ive list	of expe	erimen	ts:								• •	-	
1. Creating a Warehouse Application in SalesForce.com.														
2. Cr	2. Creating an Application in SalesForce.com using Apex programming Language.													
3. Im	3. Implementation of SOAP Web services in C#/JAVA Applications.													
4. Im	Implementation of Para-Virtualization using VM Ware's Workstation/ Oracle's Virtual Box and													
Gu	Guest O.S.													
5. Ins	5. Installation and Configuration of Hadoop.													
6. Cr	6. Create an application (Ex: Word Count) using Hadoop Map/Reduce.													
7. Ca	7. Case Study: PAAS(Facebook, Google App Engine)													
8. Ca	8. Case Study: Amazon Web Services.													
9. Ins	stall Vi	rtualbo	ox/VM	ware V	Vorksta	ation w	vith dif	ferent	flavou	rs of lii	nux or v	vindow	s OS oi	n top of
wi	ndows	7 or 8.												-
10. Ins	stall a	C con	mpiler	in the	e virtu	al ma	chine	created	l using	g virtu	al box	and ex	cecute	Simple
Pr	ograms	5	1											1
11 Ins	stall G	oogle	Ann F	ngine	Create	e hello	world	1 app :	and of	her sir	nple w	eb appl	ication	s using
nv	thon/ig	wa	npp L	ingine.	Creat		,	a upp	und ot	ner sn	iipie w	co uppi	leation	s using
12 Us		iva. Elouno	hor to	lounch	tho we	h onnl	iontion							
12. 08					ing Cl	on appi	n and	1 5 .	ahadul	ina al		that is	not me	ant in
15. SI		a ciou	a scen	ano us	ing Ci	ouasii	n and	run a s	chedui	ing aig	goriunn	that is	not pre	esent m
	CloudSim.													
14. F11	14. Find a procedure to transfer the files from one virtual machine to another virtual machine.													
15. Find a procedure to launch virtual machine using try stack (Online Open stack Demo Version)														
16. Ins	stall Ha	adoop s	single 1	node cl	uster a	nd run	simpl	e appli	cations	s like w	ord cou	unt.		
Recomm	nendati	on by B	loard of	studies	s on									
Approva	al by A	cademic	c counc	il on										
Compile	ed and c	lesigne	d by					_						
Subject	ject handled by department Department of CS & IT													

* TECHNOLOGIA		SAMRAT	' A SI	HOK	TECHNO		INST	TT	TTF			
A BATA	AMA	JAWINA I	noin	lock	a College)	VIDISHA	M P					
	New York	(An /	Auton	omous	Institute Affil	iated to RGP	V Bhop	al)				
VIDISHA M.P.	4	(DE	PAR	TMENT	OF CS &	IT)				
Semester/Y	ear	VI/III		Pro	gram	B.Tech	n – Inter	net o	f Thin	igs		
Subject	DE	Subject Code:	IoT	2064	Subject	Digit	al Signa	l Pro	cessin	g		
Category		Maximum M	(DE arks A	<u> </u>	Name	8	~			Total		
	Th	eory			Practical	Total	Cont	act H	ours	Credits		
ES	MS	Quiz/Assignme	ent	ES	LW	Marks	L	T	ТР			
70	20	10	10 30 20 150 3									
Prerequisit	es•											
Signals an	d Syster	n										
Course Ob	jective:											
• The sul	oject aim	s to introduce th	e basi	ic prin	ciples, metho	ods, and appl	ication	s of	digita	al signal		
process	ing.	g.										
• To expl	ore its alg	e its algorithmic, computational, and programming aspects.										
• The fo	cus is al	is is also on establishing a mathematical formalism for analyzing, modeling, and										
simulati	ing electr	g electrical systems in the time and frequency domains.										
UNITS			Ι	Descrip	tions				H	Irs.		
	The Di	he Discrete Fourier Transform: Introduction to DSP, Discrete										
Ι	Fourier	series, Discrete	Time	e Four	ier Transfor	m (DTFT), I	Discret	e		8		
	Fourier	urier Transform (DFT), Properties of DFT, Circular										
	convolu	ution, linear con	1									
	Compl	itation of the	DISC	Dec	Fourier Ir	time (DIT	JOERTZE	21 Г				
п	algorith	m: Decimation	in fr		(DIE) N	radiv comp), FF utation	I C		8		
11	of FFT	Comparison of	ш по f DI7	-quein and	DIF algorith	ms Compu	tations	.5		0		
	advanta	ges of FFT Alg	orithr	ns	Dii aigoina	iiiis, compu	uuioin	.1				
	FIR fil	ter Design: Intr	oduct	tion to	Digital filte	ers. Types of	f digita	1				
	filters:	FIR and IIR filte	ers. F	IR filt	er design: W	indow meth	od. FI	2				
III	filter d	lesign: Frequen	cy S	amplii	ng method,	FIR filter	design	ı:		8		
	Optima	l filter design m	ethod	l, Real	ization struc	tures for FII	R filter	s				
	and Fin	ite word length	effect	ts in F	IR filters.							
	IIR filt	ter Design: Con	npari	son of	IIR and FII	R digital filt	ers, III	R				
	filter s	pecifications, III	R filt	er des	sign method	: Impulse In	nvariar	ıt				
IV	method	l, IIR filter d	lesign	met	hod: Biline	ear Transfo	rmatio	n		8		
1 V	method	d, IIR filter design method: Matched Z-Transform method,										
	Realiza	tion structures f	or III	R filte	rs, Finite wo	ord length ef	fects i	n				
	IIR filte	ers.		0 -								
	Discret	te Random Si	gnals	× I	Power Spec	etrum Estin	natior	ı:				
	Introdu	ction to disc	rete	time	random j	process, Sp	bectrur	n				
V	represe	to rendem size	motica	ľ		8						
	Estimo:	to random sign	mation	ı, f								
	cross of	ovariance and or	CUVAI	nectru	power spec	Juuni, Estili	iates (1				
	Estimat	tes of the auto	covar	iance,	power spec	ctrum, Estin	nates c	óf				

Total H	Total Hours40													
Course	Outcor	nes:												
CO1: U	Inderst	and th	e funda	amenta	ls of D	PFT.								
CO2: A	apply t	he con	cepts o	of DFT	•									
CO3: D	Design	and an	alysis	of FIR	filters.									
CO4: D	Design	and Ai	nalysis	of IIR	filters									
CO5: U	Inderst	anding	g the co	oncept	of ranc	lom sig	gnals a	nd its a	analysi	s.				
Text Bo	ok & F	Referen	ce Bool	ks-										
1. Digi	tal Sig	gnal Pr	ocessir	ng: Sal	ivahan	an, Va	llavraj	, Gnan	apriya,	TMH				
1. Digital Signal Processing: Principles, Algorithms and Applications: Prokais, Manolakis, Pearson.														
2. Discrete Time Signal Processing: Oppenheim, Schafer, Buck, Pearson														
3. Digital Signal Processing: A. Nagoor Kani, McGraw Hill.														
Digital Signal Processing: P. Ramesh Babu, Scitech.														
List/Links of e-learning resource														
https://nptel.ac.in/courses/117102060														
Modes of Evaluation and Rubric														
The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end														
semester practical examination.														
CO-PO Mapping:														
COs	PO ₁	PO ₂	PO ₃	PO ₄	PO ₅	PO ₆	PO ₇	PO ₈	PO9	PO ₁	PO ₁₁	PO ₁₂	PSOI	PSO2
CO-1	2	2	2	•									1	<u> </u>
CO-2	3	2	2	2									2	1
CO-3	3	2	2	2									2	1
CO-4	3	2	2	2									2	1
CO-5	2	2	1	1									1	2
Suggest	ive list	of expe	eriment	ts:	_						4 . 2			
1. a)Ge	eneratio	on of li	inear co	onvolu	tion w	thout	using t	ouilt in:	tunctio	n and	the func	ction co	nv 1n	
MA	ILAB													
b) C	Benerat	tion of	circula	ar conv	olutior	n withc	out usir	ng buil	t in fur	iction i	n MAT	LAB		
2. Com	pute tl	he Disc	crete Fo	ourier	Transf	orm an	d IDF	Γ with	and wi	thout l	FFT and	HIFFT	in MAT	LAB
Impl	Implementation of Linear convolution using DFT (Overlap-add and Overlap-Save methods)													
3. Implementation of Decimation-in-time radix-2 FFT algorithm														
4. Implementation of Decimation-in-frequency radix-2 FFT algorithm														
5. Implementation of IIR digital filter using Butterworth method and bilinear transformation														
6. Implementation of IIR digital filter using Datter world method and onmeal transformation 6. Implementation of IIR digital filter using Chebyshev (Type I and II) method														
7. Impl	7 Implementation of FIR digital filter using window (Rectangular Hamming Hanning Bartlett)													
meth	nods			B		5		(110010		,		8	, 2 41 110	,
8 Impl	ement	ation o	f FIR	dioital	filter u	sing fr	equend	w sam	nling r	nethod				
o. mp	ement	unon 0	1 1 11 (argital	inter u	Sing II	equent	y sam	Philip I	neurou				

- 9. Implementation of optimum equiripple FIR digital filter using window methods
- 10.DTMF Tone Generation and Detection Using Goertzel Algorithm
- 11.Implementation of sampling rate conversion by decimation, interpolation and a rational factor using MATLAB
- a. Implementation of DFT
- b. Sine wave generation using lookup table with values generated from MATLAB
- 12.IIR and FIR Filter Implementation using DSP Kits.

Department of CS & IT



(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

DEPARTMENT OF CS & IT

Semester/Year		VI/III		Prog	gram	B.Tech – Internet of Things					
Subject Category	ject OC Subject		IoT 2065 (OC – 2A)		IoT 2065 Subject (OC – 2A) Name		Artificial intelligence for IoT				
		Maximum M	larks A	llotted			Cont	oot U		Total	
Theory]	Practical	Total	Com		Jurs	Credits	
ES	MS	Quiz/Assignm	ES	LW	Marks	L	Т	Р			
70	20	10				100	3	0	0	3	

Prerequisites:

Basic Knowledge of algorithms

Course Objective:

• Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem.

- Review of classical problem solving: search and forward and backward chaining.
- Formalize a given problem in the language/framework of different AI methods (e.g., as a search problem, as a constraint satisfaction problem, as a planning problem etc.

UNITs	Descriptions	Hrs.
Ι	The AI Problems, The Underlying Assumption, AI Techniques, Level of the Model, Criteria for Success, Some general references, one Final Word. Problems and State Space Search, Defining Problems as a State Space Search, Production Systems, Production Characteristics, Production System Characteristics, and issues in the design of Search Programs, additional problems. Generate-and-Test, Hill Climbing, Best- First Search, Problem Reduction, Constraint Satisfaction, Means-Ends Analysis.	7
П	Representations and Mappings, Approaches to Knowledge Representation. Using Predicate Logic, Representation Simple Facts in Logic, Representing instance and is a Relationships, Computable Functions and Predicates, Resolution. Representing Knowledge Using Rules Procedural versus Declarative Knowledge, Logic Programming, Forward versus Backward Reasoning.	7
III	Introduction to Non-monotonic Reasoning, Logics for Non-monotonic Reasoning. Statistical Reasoning, Probability and Bay's Theorem, Certainty Factors and Rule-Base Systems, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic. Weak Slot-And-Filler Structure, Semantic Nets, Frames. Game Playing: Overview, Example Domain the Blocks World, Components of a Planning System, Goal Stack Planning.	7
IV	Nonlinear Planning Using Constraint Posting, Hierarchical Planning, Reactive Systems, Other Planning Techniques. Natural Language Processing introduction, Syntactic Processing, Semantic Analysis, Discourse and Pragmatic Processing. Connectionist Models introduction: Hopfield Network, Learning in Neural Networks, Application of Neural Networks, Recurrent Networks, Distributed Representations, Connectionist AI and Symbolic AI.	7
V	Developments Process, knowledge Acquisition. Introduction to Prolog, Syntax and Numeric Function, Basic List Manipulation Functions in Prolog, Functions, Predicates and Conditional, input, output and Local Variables, iteration and Recursion, Property Lists and Arrays, LISP and	7

	ot	her AI	Progra	ammin	g Lang	guages	•							
Total H	ours												3	5
Course	Outcor	nes:												
CO-1 : 1	Descril	be vari	ous sea	arching	g metho	ods and	l reaso	ning in	AI.					
CO-2:	Uses o	f Knov	vledge	Repre	sentatio	on Tec	hnique	es.						
CO-3:	Analy	sis the	concep	ots of r	easoni	ng and	planni	ing.						
CO-4:	Illustr	ate the	conce	pt of N	LP and	1 NN								
CO-5: /	Apply	and ev	aluate	AI Teo	chnique	es usin	g prolo	og and	lisp.					
Text Bo	ok & F	Referen	ce Boo	ks-										
1. Ar	tificial	Intelli	gence	-By El	aine Ri	ich An	d Kevi	n Knig	t (2nd	l Editi	on) Tata	a Mcgra	aw-Hill	
1. Int 2. "P 3. "P 4. "A 5. "A Ed 6. Ar 7. "A List/Lin • Modes of The eval	roduct ROLO rogram rtificia ucation tificial <u>Artifici</u> <u>ks of e</u> <u>http</u> <u>of Eval</u> luation	ion to G Prog ming il Intell il Intell n. Intelli al Intel -learni s://npte uation modes	Prolog gramm with Pl ligence ligence <u>gence</u> <u>lligenc</u> <u>ng reso</u> <u>l.ac.in/(</u> <u>and Ru</u> consis	Progra ing Fo: ROLO " (Fift " (Sec Applic <u>e And</u> <u>urce</u> <u>courses</u> <u>ibric</u> t of per	ammin r Artifi G" — F h Editi ond Ec ation F Expert /106102	g By C cial In 3y Klo on) -B lition}- Program System 2220	Carl To telligen cksin a y Geor -By Stu mming. ms " -E	wnsend nce" -E and Me ge F L uart Ru , Tim J By D.W	d. By Ivan Ilish. uger, H Issell a ones, V 7 Patter ter Tes	Bratk Pearson nd Pete Wiley I rson	o(Addi n Educa er Norv India. z/Assigr	son-We tion. ig, Pear	esley) rson term wo	ork, end
semester	practio	cal exar	ninatio	n										
		ng: PO2	PO	PO.	POr	PO	PO ₇	PO	PO	PO:	PO	POn	PSO1	PSO2
CO-1	2	102	2	104	105	106	107	108	109	101	IUII	1012	1501	2
CO-2	2	2	2	1									2	1
CO-3	2	1	2	1									2	1
CO-4	2	1	2	1									2	1
CO-5	2	2	1										1	2
Recomm	nendatio	on by B	loard of	studies	s on	•			•		-		•	· · · · · ·
Approva	l by A	cademic	c counc	il on										
Compile	d and c	lesigne	d by											
Subject	handled	i by der	oartmen	t				Depart	ment o	f CS &	IT			

SHOR TECHNOLOGICAL		SAMRAT	ASI	HOK	TECHNO	LOGICAL	INS	TIT	UTE				
GTA		(Engineering College). VIDISHA M.P.											
Second Second	A STATE	- Dal)											
UIDISHA M.R.	1	DEPARTMENT OF CS & IT											
Semester/Ye	ar	VI/III Program B Tech - Internet								øs			
Subject		Subject Code:	ІоТ	IoT 2065 Subject									
Category	UC	Subject Code.	(OC – 2B) Name Advanced Computer						r Arcintecture				
	Т	Naximum Ni heory	arks A	arks Allotted Practical		Total	Con	tact H	ours	Total Credits			
ES	MS	Quiz/Assignme	ent	ES	LW	Marks	L		Р	creatis			
70	20	10		-	-	100	3	0	0	3			
Prerequisit	es:												
Course Obi	ective												
• Learn	to Mod	lels of Computer	Arch	itectur	'es								
Be av	are of S	Systematic and Particle	aralle	l mode	es. els								
• Be far	miliar w	vith the microinst	ructio	n Lev	el Programr	ning							
UNITS			Γ	Descrip	tions	8			Н	lrs.			
	Introd	uction to paralle	lism.	Paral	lel Comput	er Models.	Parall	el					
	compu	iter Architecture	and	Class	ification. S	tate of Com	putin	g.					
	Multir	processors and	Multi	compu	ter, Multi	vector and	SIM	D					
	Comp	uters, PRAM	and	i V	LSÍ Mod	els, Archi	tectur	al					
Ι	Develo	opment, Conditio	ons o	f Para	llelism, Pro	ogram partiti	ion ai	nd	6				
	schedu	ling, Flow	mecl	hanisn	n, System	n Intercon	nectio	on					
	Archit	ectures. Principl	es of	e scala	able Perform	mance Metri	ics ar	nd					
	Measu	res, Parallel Proc	essin	g App	lications, Sp	peedup perfo	rman	ce					
	laws, S	Scalability Analy	sis an	d App	roaches.								
	Proces	ssors and Mer	nory	Hier	archy, Ad	vanced pro	cessii	ng					
	Techn	ology, Supersca	alar	and	Vector Pr	ocessors, N	Лето	ry					
	Hierar	chy, Virtual Me	emory	, Bus	,Cache ar	nd Shared N	/lemo	ry					
	organi	zations, Sequent	ial ar	nd We	eak consiste	ency Models	, Bas	ic					
II	concep	ots of pipelinin	ıg, d	ata h	azards, con	ntrol hazard	ls, aı	nd		8			
	structu	iral hazards; Teo	chniq	ues fo	or overcomi	ng or reduc	ing t	ne					
	effects	s of various hazar	ds. Pi	ipelini	ng and Supe	erscalar Tech	inique	es.					
	Linear	and Nonlinear	pipe	line p	rocessors,	Instruction I	Pipelin	ne					
	Design	h, Scalar and Arit	hmet	ic pipe	eline Design	•	<u> </u>						
	Paralle	el and Scalabl		omput	ers, Multi	processors	Syste	m					
	Three	Concerts, Cache co	onere	nce an	a Synchron	Magaza	nanisi Dagala	n,					
	Inree	Generations	OI Vəstər	Multi	computer,	Message	Passii	ng					
III	Wester	\mathbf{U}		and	SIMD COI	nputers Con	npour	10		8			
	Multit	broaded And T	INID Notofl	comp	rehitectures	Izations. 5	Uidin	e,					
	Drinci	ples of Multit	brood	ing A	Fine Grai	n Multicon	anutai	g,					
	Datafl	ow and Hybrid C	omn	iters			iputer	з,					
	Paralle	Models I and	1900	and co	mnilers Pa	rallel progra	mmir	ησ					
	model	s Parallel Lang	1190es	and co	compiler	Data Arrave		ie le					
IV	Ontim	ization and Sche	Julino	r Loo	n Paralleliza	tion and Pin	elinin	σ.		10			
	Paralle	el programming l	Envire	onmen	its, Synchro	nization –Pr	incipl	es					

	and appl Message	lication	ns, S	Shared	Vari	able, Multi	progra	ammin uters	ng env	vironm	ent-			
	Instructio	on lev	vel p	ipelini	ing, I	Design	Issue	es, M	odels,	Comp	oiler			
	detected	instr	uction	n Le	vel p	aralle	lism,	opera	and fo	orward	ing,			
	reorder	buffer	r, L	imitati	ion i	n Ex	ploitir	ng In	structi	on Le	evel			
V	parallelis	m. S	Struct	ured	paral	lelism	vers	sus I	nstruct	tion le	evel	8	5	
	parallelis	m, Fi	unctio	on Lil	brary	for P	aralle	l prog	ramm	ing. I	Data			
	flow Co	ompute	ers,	Reduc	tion	comp	uter a	archite	ctures	, Syst	olic			
T 4 1 II	Architect	ures.											0	
Total Hour	S											40	0	
	escribe the	orga	nizat	ion of	f com	nuter_	hased	syste	ms an	d how	a ran	ge of	design	
choices ar	e influence	d hv	annlia	ration	s	puter	Juseu	syste	ins an	u now	a ran	50 01	uesign	
CO-2 : C	ompare an	nd con	ntrast	betw	veen 1	proces	sor a	rchited	ctures	and s	vstem-	level	design	
processes.	••••••••••••••••										<i>J</i>			
CO-3: I	Design the	com	poner	nts an	d ope	ration	of a	mem	ory hi	erarchy	y and	the rai	nge of	
performar	ice issues i	nfluer	icing	it.	1				5	-			U	
CO-4: A	pply the o	operat	ion	of cur	rent g	genera	tion 1	paralle	el con	nputer	system	ns, inc	luding	
multiproc	essor and n	nultico	ore sy	ystems	5.		-			-	•		C	
CO-5: A	pply the di	ifferer	nt cor	ncepts	of par	allelis	m and	l solve	e relate	ed prob	lems.			
						unom	in une	1 00110	101410	a proo				
Text Book				I		unone	, in une	. 50170	ioiute	<u>a proo</u>				
Text Book1.Kai	Hwang,	Adv	vance	ed (Comp	uter	Arch	itectu	re:	Paralle	lism,	Scala	ability,	
Text Book 1. Kai Progr	Hwang, ammability	Adv y, Mo	vance cGrav	ed (w-Hill	Compi	uter	Arch	itectu	re:	Paralle	lism,	Scala	ability,	
Text Book 1. Kai Progr Reference I	Hwang, ammability Books	Adv y, Mo	vance cGrav	ed (w-Hill	Compi	uter	Arch	itectu	re:	Paralle	lism,	Scala	ability,	
Text Book 1. Kai Progr Reference I 1. John Approx	Hwang, ammability Books L. Henness Dach, Mor	Ad ^y y, Mo sy and rgan K	vance cGrav l Dav Kaufn	ed (w-Hill id A. l	Compo Patters	uter son, C	Arch	itectur ter Arc	re:	Paralle ure: A	lism, Quanti	Scala	ability,	
Text Book 1. Kai Progr Reference I 1. John Appro List/Links	Hwang, ammability Books L. Henness Dach, Mon of e-learning	Adv y, Mo sy and rgan K g resou	vance cGrav l Dav Kaufn rce	ed (w-Hill id A. 1 nann.	Compo Patters	uter son, C	Arch	itectur	re:	Paralle ure: A	lism, Quanti	Scala	ability,	
Text Book 1. Kai Progr Reference 1. John Appro List/Links http	Hwang, ammability Books L. Henness bach, Mor of e-learning ps://archive.r	Ad ^y y, Mo sy and rgan K g resou	vance cGrav l Dav Kaufn rce	ed (w-Hill id A. l nann. urses/10	Computers	uter son, C	Arch omput	itectur	re:	Paralle ure: A	lism, Quanti	Scala	ability,	
Text Book 1. Kai Progr Reference I 1. John List/Links Modes of E	Hwang, ammability Books L. Henness Dach, Mor Df e-learning ps://archive.r valuation ar	Ad ¹ y, Mo sy and rgan K g resou 1ptel.ac nd Rub	vance cGrav l Dav Kaufn rce c.in/cop pric	ed (w-Hill id A. I nann.	Computers	uter son, C	Arch omput	itectur ter Arc	re:	Paralle ure: A	lism, Quanti	Scala	ability,	
Text Book 1. Kai Progr Reference I 1. John Appro List/Links Modes of E The evaluat	Hwang, ammability Books L. Henness bach, Mor of e-learning ps://archive.r valuation ar ion modes c	Ad ¹ y, Mo sy and rgan K g resou nptel.ac nd Rub	vance cGrav l Dav Kaufn rce c.in/con pric of per	ed (w-Hill id A. l nann. urses/10	Completion Patters	uter son, C (106103 wo mid	Arch omput 3206/	itectur ter Arc	re: Echitect	Paralle ure: A	Quanti	Scala itative term wo	ability,	
Text Book 1. Kai Progr Reference I 1. John Appro List/Links Modes of E The evaluat semester pra	Hwang, ammability Books L. Henness Dach, Mor of e-learning ps://archive.r valuation ar ion modes c actical exami	Ad ⁴ y, Mo sy and rgan K g resou nptel.ac nd Rub consist of ination.	vance cGrav l Dav Xaufn rce c.in/con oric of per	ed (w-Hill id A. I nann. urses/1(Compt Patters D6/103/ ce in t	uter son, C	Arch omput 3206/	itectur ter Arc	re:	Paralle ure: A z/Assign	Quanti	Scala itative term wo	ability,	
Text Book 1. Kai Progr Reference I 1. John Appro List/Links Modes of E The evaluat semester pra CO-PO Ma COs PC	Hwang, ammability Books L. Henness Dach, Mor of e-learning ps://archive.r valuation ar ion modes c actical exami pping: D1 PO2 1	Ad y, Mo sy and rgan K g resou optel.ac on Rub consist of ination.	vance cGrav l Dav (aufn rce :.in/con oric of per	ed (w-Hill id A. l nann. urses/10 forman	Compt Patters 06/103/ ce in tr	uter son, C 106103 wo mid	Arch omput 3206/ I semes	itectur ter Arc	re:	Paralle ure: A z/Assign	Quanti Quanti ments,	Scala itative term wo	ability,	
Text Book 1. Kai Progr Reference I 1. John Appro List/Links Modes of E The evaluat semester pra CO-PO Ma COs PO CO-1 2	Hwang, ammability Books L. Henness bach, Mor of e-learning os://archive.r valuation ar ion modes c actical exami pping: D1 PO2 1 2 1	Adv y, Mo sy and rgan k g resou ptel.ac nd Rub consist o ination.	vance cGrav l Dav čaufn rce c.in/con oric of per	ed (w-Hill id A. 1 nann. urses/10 forman	Compt Patters D6/103/ ce in tr PO6	uter son, C 106103 wo mid	Arch omput 3206/ I semes	itectur ter Arc	re:	Paralle ure: A z/Assign	Quanti quanti ments,	Scala itative term wo PSO1 1	ability, ork, end PSO2 1	
Text Book 1. Kai Progr Reference I 1. John Appro List/Links of Modes of E The evaluat semester pra CO-PO Ma COs PO CO-1 2 CO-2 2	Hwang, ammability Books L. Henness Dach, Mor of e-learning Dis://archive.r valuation ar ion modes c actical exami pping: D1 PO2 1 2 1 2 2	Ad y, Mo sy and rgan K g resou ptel.ac nd Rub consist of ination. PO ₃	vance cGrav l Dav (aufn rce c.in/cot oric of per	ed (w-Hill id A. 1 nann. urses/10 forman	Compt Patters 06/103/ ce in tr PO6	uter son, C (106103 wo mic PO 7	Arch omput 3206/ 1 semes	ter Tes	re: chitect ts, Quiz	Paralle ure: A z/Assign	Quanti Quanti ments, PO ₁₂	Scala itative term wo PSO1 1 2	ability, ork, end PSO2 1 1	
Text Book 1. Kai Progr Reference I 1. John Appro List/Links of The evaluat Semester pra CO-PO Ma COs PO CO-1 2 CO-2 2 CO-3 2	Hwang, ammability Books L. Henness bach, Monor of e-learning ps://archive.r valuation ar ion modes c actical examing pping: D1 PO2 1 PO2 2 1 2 2 2 2	Adv y, Mo sy and rgan K g resou nptel.ac nd Rub consist o ination. PO3 1 2 2 2 2	vance cGrav l Dav Kaufn rce c.in/cot oric of per PO ₄ 1 1	ed (w-Hill id A. l nann. urses/10 forman	Comple. Patters D6/103/ ce in tr PO6	uter son, C (106103 wo mid PO 7	Arch omput 3206/ I semes	itectur ter Arc	re:	Paralle ure: A z/Assign	Quanti ments, PO ₁₂	Scala itative term wo PSO1 1 2 2	ability, ork, end PSO2 1 1 1 1	
Text Book 1. Kai Progr Reference I 1. John 1. John Appro List/Links Modes of E The evaluat semester pra CO-PO Ma COs PO CO-1 2 CO-2 2 CO-3 2 CO-4 2	Hwang, ammability Books L. Henness bach, Mor of e-learning ps://archive.r valuation ar ion modes c actical exami pping: D1 PO2 1 2 1 2 2 2 2 2 2	Adv y, Mo sy and rgan k g resou ptel.ac nd Rub consist o ination.	vance cGrav l Dav čaufn rce c.in/coo pric of per PO4 1 1 1 1	ed (w-Hill id A. I nann. urses/1(forman	Compt Patters D6/103/ ce in t PO 6	uter son, C 106103 wo mic	Arch omput 3206/ I semes	ter Tes	re:	Paralle ure: A z/Assign	Quanti quanti ments, PO ₁₂	Scala itative term wo PSO1 1 2 2 2	ability, ork, end PSO2 1 1 1 1 1 1	
Text Book 1. Kai Progr Reference I 1. John I Appro List/Links of Modes of E The evaluat semester pra CO-PO Ma CO-1 2 CO-2 2 CO-3 2 CO-4 2	Hwang,ammabilityBooksL. HennessDach, Monof e-learningps://archive.rvaluation arion modes cactical examinicpping:D1PO212122222222	Adv y, Mo sy and rgan K g resou ptel.ac on Rub consist of ination.	vance cGrav l Dav Kaufn rce c.in/cou oric of per PO4 1 1 1 1	ed (w-Hill id A. 1 nann. urses/10 forman	Compt. Patters 06/103/ ce in tr PO 6	uter son, C 106103 wo mid	Arch omput 3206/ I semes	ter Tes	re: chitect ts, Qui:	Paralle ure: A z/Assign	Quanti ments,	Scala itative term wo PSO1 1 2 2 2 1	ability, ork, end PSO2 1 1 1 1 1 1 1 1	
Text Book1.KaiProgrReference I1.JohnApproList/LinksModes of EThe evaluatsemester praCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-22CO-2CO-2CO-2CO-2CO-2CO-2CO-2CO-2CO-2CO-3CO-4CO-5CO-5CO-4CO-5	Hwang, ammability Books L. Henness bach, Mor of e-learning os://archive.rr valuation ar ion modes c actical exami pping: D1 PO2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Adv y, Mo sy and rgan K g resou nptel.ac nd Rub consist of nation.	vance cGrav l Dav (aufn rce :.in/cor oric of per PO4 1 1 1 1	ed (w-Hill id A. l nann. urses/10 forman PO 5	Compt. Patters D6/103/ ce in tr PO 6	uter son, C (106103 wo mid PO 7	Arch omput 3206/ I semes	ter Tes	re:	Paralle ure: A z/Assign	Quanti uments, PO ₁₂	Scala itative term wo PSO1 1 2 2 2 1	ability, ork, end PSO2 1 1 1 1 1 1 1 1	
Text Book1. KaiProgrReference I1. JohnApproList/LinksModes of EThe evaluatsemester praCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-PO MaCO-2CO-2CO-2CO-3CO-2CO-3CO-4CO-4CO-4CO-4CO-4CO-4Co-4CO-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-4Co-5Co-4Co-4Co-4Co-4Co-5Co-6Co-7Co-6Co-7Co-6 <th co<="" td=""><td>Hwang, ammability Books L. Henness Dach, Mor of e-learning pos://archive.rr valuation ar ion modes c actical exami pping: D1 PO2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>Adv y, Mo sy and rgan k g resou ptel.ac nation. PO₃ 2 2 2 2 2 1 ard of s council</td><td>vance cGrav l Dav čaufn rce c.in/coo oric of per PO4 1 1 1 1 1 1 1</td><td>ed (w-Hill id A. Inann. urses/10 forman PO5</td><td>Compt Patters 06/103/ ce in tv</td><td>uter son, C (106103 wo mic PO7</td><td>Arch omput 3206/ I semes</td><td>ter Tes</td><td>re: chitect ts, Quiz</td><td>Paralle ure: A z/Assign</td><td>Quanti Quanti ments, PO₁₂</td><td>Scala itative term wo PSO1 1 2 2 2 1</td><td>ability, ork, end PSO2 1 1 1 1 1 1 1 1</td></th>	<td>Hwang, ammability Books L. Henness Dach, Mor of e-learning pos://archive.rr valuation ar ion modes c actical exami pping: D1 PO2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td> <td>Adv y, Mo sy and rgan k g resou ptel.ac nation. PO₃ 2 2 2 2 2 1 ard of s council</td> <td>vance cGrav l Dav čaufn rce c.in/coo oric of per PO4 1 1 1 1 1 1 1</td> <td>ed (w-Hill id A. Inann. urses/10 forman PO5</td> <td>Compt Patters 06/103/ ce in tv</td> <td>uter son, C (106103 wo mic PO7</td> <td>Arch omput 3206/ I semes</td> <td>ter Tes</td> <td>re: chitect ts, Quiz</td> <td>Paralle ure: A z/Assign</td> <td>Quanti Quanti ments, PO₁₂</td> <td>Scala itative term wo PSO1 1 2 2 2 1</td> <td>ability, ork, end PSO2 1 1 1 1 1 1 1 1</td>	Hwang, ammability Books L. Henness Dach, Mor of e-learning pos://archive.rr valuation ar ion modes c actical exami pping: D1 PO2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Adv y, Mo sy and rgan k g resou ptel.ac nation. PO ₃ 2 2 2 2 2 1 ard of s council	vance cGrav l Dav čaufn rce c.in/coo oric of per PO4 1 1 1 1 1 1 1	ed (w-Hill id A. Inann. urses/10 forman PO 5	Compt Patters 06/103/ ce in tv	uter son, C (106103 wo mic PO7	Arch omput 3206/ I semes	ter Tes	re: chitect ts, Quiz	Paralle ure: A z/Assign	Quanti Quanti ments, PO ₁₂	Scala itative term wo PSO1 1 2 2 2 1	ability, ork, end PSO2 1 1 1 1 1 1 1 1
Text Book 1. Kai Progr Reference I 1. John Appro List/Links of bit Modes of E The evaluat semester pra CO-PO Ma CO-1 CO-2 CO-3 CO-4 CO-5 Recommend Approval by Compiled an	Hwang, ammability Books L. Henness Dach, Mor of e-learning Dis://archive.r valuation ar ion modes c actical exami pping: D1 PO2 1 2 1 2 2 2 2 2 2 2 2 4 ation by Boa 7 Academic c and designed by	Adv y, Mo sy and rgan K g resou aptel.ac on Rub consist of ination. PO ₃ 1 2 2 2 2 2 2 1 ard of s council by	vance cGrav l Dav Xaufn rce e.in/cou oric of per PO4 1 1 1 1 1 1 1 1	ed (w-Hill id A. 1 nann. urses/10 forman PO ₅	Compt. Patters D6/103/ ce in tr PO6	uter son, C 106103 wo mid PO7	Arch omput 3206/ I semes PO8	ter Tes	re: chitect ts, Quiz	Paralle ure: A z/Assign	Quanti Quanti ments, 1	Scala itative term wo PSO1 1 2 2 2 1	ability, ork, end PSO2 1 1 1 1 1 1 1	