

DECLARATION

I, Dr. N. KANYA, Head of Information Technology, hereby declare that this copy of the syllabus (B. Tech – Information Technology -Full Time 2018 Regulation after CDC with Universal Human Values) is the final version which is being taught in the class and uploaded in our University website. I assure that the Syllabi available in our University website is verified and found correct. The Curriculum and Syllabi have been ratified by our Academic Council / Vice Chancellor.



B.Tech – Information Technology (Full Time)

Curriculum and Syllabus 2018 Regulation – To be implemented from 2021-2022 Batch

		III SEMESTER					
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
1	BMA18008	Discrete Mathematics	Ту	3	1/0	0/0	4
2	BIT18001	Data Structures and Algorithms	Ту	3	0/0	0/0	3
3	BCS18002	Object Oriented Programming with C++	Ту	3	0/0	0/0	3
4	BEC18I03	Information Theory and Coding	Ту	3	1/0	0/0	4
5	BEC18I01	Digital Systems	Ту	3	0/0	0/0	3
		PRACTICALS*					
1	BHS20ET5	Universal human values 2: Understanding harmony	ETL	1	0/1	3/0	3
2	BIT18L01	Data Structures and Algorithms Lab	Lb	0	0/0	3/0	1
3	BCS18L02	Object Oriented Programming with C++ Lab	Lb	0	0/0	3/0	1
4	BEC18IL1	Digital Systems Lab	Lb	0	0/0	3/0	1
			С	redi	ts Sub '	Total	23

IV SEMESTER									
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С		
1	BMA18016	Statistics for Computer Engineers	Ту	3	1/0	0/0	4		
2	BCS18004	Database Management Systems	Ту	3	0/1	0/0	4		
3	BIT18002	System Software & Operating System	Ту	3	0/1	0/0	4		
4	BEC18I02	Microprocessors and Microcontrollers	Ту	3	0/0	0/0	3		
5	BHS18NC1/ BHS18NC2	The Indian Constitution*/ The Indian Traditional Knowledge*	Ту	2	0/0	0/0	NC		
		PRACTICALS*		•					
1	BCS18ET1	Java Programming	ETL	1	0/1	3/0	3		
2	BCS18L03	Database Management Systems Lab	Lb	0	0/0	3/0	1		
3	BIT18L02	System Software and Operating System Lab	Lb	0	0/0	3/0	1		
4	BEC18IL2	Microprocessors and Microcontrollers Lab	Lb	0	0/0	3/0	1		
5	BIT18TS1	Technical Skill I	Lb	0	0/0	3/0	1		
6	BEN18SK1	Soft Skill I (Career & Confidence Building)	ETL	0	0/0	3/0	1		
			Cr	edit	s Sub 7	Fotal	23		

C: Credits L: Lecture T: Tutorial S.Lr: Supervised Learning P: Problem / Practical R: Research Ty/Lb/ETL: Theory /Lab/Embedded Theory and Lab * Internal Evaluation

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values



2018 Regulation

V SEMESTER										
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/	L	Τ/	P/R	C			
			Lb/		S.Lr					
			ETL							
1	BCS18009	Object Oriented Software Engineering	Ту	3	1/0	0/0	4			
2	BCS18007	Computer Networks	Ту	3	0/0	0/0	3			
3	BXX18EXX	Elective I	Ту	3	0/0	0/0	3			
4	BXX180EX	Open Elective I	Ту	3	0/0	0/0	3			
		PRACTICALS*								
1	BCS18ET2	Computer Graphics	ETL	1	0/1	3/0	3			
2	BCS18L08	Object Oriented Software Engineering Lab	Lb	0	0/0	3/0	1			
3	BCS18L05	Network Programming Lab	Lb	0	0/0	3/0	1			
4	BIT18TS2	Technical Skill II	Lb	0	0/0	3/0	1			
			C	redi	ts Sub '	Total	19			

		VI SEMESTER					
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
1	BCS18010	Data Warehousing and Data Mining	Ту	3	0/0	0/3	4
2	BIT18003	Web Technology and Web Services	Ту	3	0/0	0/0	3
3	BXX18EXX	Elective II	Ту	3	0/0	0/0	3
4	BXX180EX	Open Elective II	Ту	3	0/0	0/0	3
PRACTICALS*							
1	BCS18ET3	PHP/MySQL	ETL	1	0/1	3/0	3
2	BCS18L11	Data Mining Lab	Lb	0	0/0	3/0	1
3	BIT18L03	Web Technology and Web Services Lab	Lb	0	0/0	3/0	1
4	BEN18SK2	Soft Skill II (Qualitative and Quantitative Skills)	ETL	0	0/0	3/0	1
5	BIT18L04	Mini Project/In plant Training/Industrial Training	Lb	0	0/0	3/0	1
6	BIT18TS3	Technical Skill III	Lb	0	0/0	3/0	1
			C	redi	ts Sub	Total	21

C: Credits L: Lecture T: Tutorial S. Lr : Supervised Learning P : Problem / Practical R : ResearchTy/Lb/ETL: Theory/Lab/Embedded Theory and Lab*Internal evaluation



	VII SEMESTER									
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С			
1	BIT18006	Cloud Technology	Ту	3	0/0	0/0	3			
2	BXX18EXX	Elective III	Ту	3	0/0	0/0	3			
3	BCS18012	Open Source Scripting Languages	Ту	3	0/0	0/0	3			
4	BMG18002	Management Concepts and Organizational Behavior	Ту	3	0/0	0/0	3			
		PRACTICALS*								
1	BXX18OLX	Open Lab	Lb	0	0/0	3/0	1			
2	BIT18ET1	Mobile Application Development	ETL	1	0/1	3/0	3			
3	BIT18L05	Cloud Application Development Lab	Lb	0	0/0	3/0	1			
4	BIT18L06	Scripting Languages Lab	Lb	0	0/0	3/0	1			
5	BIT18L07	Project Phase – 1	Lb	0	0/0	3/3	2			
6	BHS18FLX	Foreign Language	Lb	0	0/0	3/0	1			
			Cr	edit	s Sub '	Fotal	21			

	VIII SEMESTER										
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty / Lb / ET L	L	T/ S.Lr	P/R	С				
1	BIT18005	Wireless Communication	Ту	3	0/0	0/3	4				
2	BXX18EXX	Elective 4	Ту	3	0/0	0/0	3				
3	BXX18EXX	Elective 5	Ту	3	0/0	0/0	3				
	PRACTICALS*										
1	BIT18L08	Project (Phase – II)	Lb	0	0/0	12/12	8				

Credits Sub Total: 18

C: Credits L: Lecture T: Tutorial S.Lr: Supervised Learning P: Problem / Practical R: Research Ty/Lb/ETL: Theory /Lab/Embedded Theory and Lab * Internal Evaluation



	ELECTIVE -I (Common to CSE&IT)									
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С			
1	BCS18E01	Image Processing	Ту	3	0/0	0/0	3			
2	BCS18E02	Geographical Information Systems	Ту	3	0/0	0/0	3			
3	BCS18E03	Database Tuning	Ту	3	0/0	0/0	3			
4	BCS18E04	Component Based Technology	Ту	3	0/0	0/0	3			
5	BCS18E05	E-Commerce	Ту	3	0/0	0/0	3			
6	BCS18E06	Artificial Intelligence	Ту	3	0/0	0/0	3			
7	BCS18E07	Human Computer Interaction	Ту	3	0/0	0/0	3			
8	BCS18E08	Wireless and Mobile Networking	Ту	3	0/0	0/0	3			
9	BCS18005	Design And Analysis of Algorithms	Ту	3	0/0	0/0	3			

	ELECTIVE -II										
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С				
1	BCS18E09	Web Mining	Ту	3	0/0	0/0	3				
2	BCS18E10	Web Data Design and Management	Ту	3	0/0	0/0	3				
3	BCS18E11	Risk Management	Ту	3	0/0	0/0	3				
4	BCS18E12	Cryptography and Network Security	Ту	3	0/0	0/0	3				
5	BCS18E13	Mobile Adhoc Networks	Ту	3	0/0	0/0	3				
6	BCS18E14	TCP/IP Design and Implementation	Ту	3	0/0	0/0	3				
7	BCS18E15	Cyber Forensics and Internet Security	Ту	3	0/0	0/0	3				
8	BCS18E16	Database Security	Ту	3	0/0	0/0	3				
9	BCS18E17	Management Information Systems	Ту	3	0/0	0/0	3				

	ELECTIVE –III									
S.NO.	SUBJECT	SUBJECT NAME	Ty/	L	T /	P/R	С			
	CODE		Lb/		S.Lr					
			ETL							
1	BCS18E18	Data Science and Big Data Analytics	Ту	3	0/0	0/0	3			
2	BCS18E19	Network Forensics	Ту	3	0/0	0/0	3			
3	BCS18E20	Internet of Things	Ту	3	0/0	0/0	3			
4	BCS18E21	Social Computing	Ту	3	0/0	0/0	3			
5	BCS18E22	Enterprise Architecture	Ту	3	0/0	0/0	3			
6	BCS18EXX	Subject based on Industry Demand	Ту	3	0/0	0/0	3			
7	BCS18E23	Optimization Techniques	Ту	3	0/0	0/0	3			



		ELECTIVE –IV & V					
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
1	BCS18E24	Information Storage Management	Ту	3	0/0	0/0	3
2	BCS18E25	Network Infrastructure Management	Ty	3	0/0	0/0	3
3	BCS18E26	Foundations of Parallel Programming	Ту	3	0/0	0/0	3
4	BCS18E27	Virtualization	Ту	3	0/0	0/0	3
5	BCS18E28	Hadoop Distributed File System	Ту	3	0/0	0/0	3
6	BCS18E29	Mobile Databases	Ту	3	0/0	0/0	3
7	BCS18E30	Web Engineering	Ту	3	0/0	0/0	3
8	BCS18E31	4G Networks	Ту	3	0/0	0/0	3
9	BCS18E32	Enterprise Resource Planning	Ту	3	0/0	0/0	3
10	BCS18E33	Supply Chain Management	Ту	3	0/0	0/0	3
11	BCS18E34	Mainframe Computing	Ту	3	0/0	0/0	3
12	BCS18E35	Neuro Fuzzy Computing	Ту	3	0/0	0/0	3
13	BCS18E36	Web Content Management	Ту	3	0/0	0/0	3
14	BCS18E37	Machine Learning	Ту	3	0/0	0/0	3
15	BCS18E38	M-Commerce	Ту	3	0/0	0/0	3
16	BCS18E39	Real Time Systems	Ту	3	0/0	0/0	3
17	BCS18E40	Distributed Computing	Ту	3	0/0	0/0	3

Credit Summary

Semester : 1	: 20
Semester : 2	: 16
Semester : 3	: 22
Semester : 4	: 23
Semester : 5	: 19
Semester : 6	: 21
Semester: 7	: 21
Semester : 8	: 18
Total Credits	: 160



		Open Electives					
S.NO.	SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
	CODE		ETL		5.11		
1	BIT18OE1	Web Design	Ту	3	0/0	0/0	3
2	BIT180E2	Digital Marketing	Ту	3	0/0	0/0	3
3	BIT18OE3	Information Security Management	Ту	3	0/0	0/0	3
4	BIT180E4	Introduction to Multimedia	Ту	3	0/0	0/0	3

		Open Lab					
S.NO.	SUBJECT	SUBJECT NAME	Ty/	L	T /	P/R	С
	CODE		Lb/ ETL		S.Lr		
1	DCG10OL1			0	0./0	2/0	1
1	BCS18OL1	Visual Programming Lab	Lb	0	0/0	3/0	1
2	BCS18OL2	Web Design Lab	Lb	0	0/0	3/0	1
3	BCS18OL3	Python Programming Lab	Lb	0	0/0	3/0	1
4	BCS18OL4	Computer Network Lab	Lb	0	0/0	3/0	1
5	BCS18OL5	PHP / MySQL Programming Lab	Lb	0	0/0	3/0	1



SEMESTER – III

					SEMES'	<u> TER –</u>						<u>.</u>
Subject Co BMA1800		-	t Name		ATHEM			Ty/	L	T/	P/R	С
BMA1800	0	l	JISCKI		AIHEM	AIICS)	Lb/ ETL		S.Lr		
		Prerequ	uisite : N	None				Ту	3	1/0	0/0	4
L : Lecture			-		•		ct R : R	lesearch	C: Cre	edits		
T/L/ETL :	*	Lab / Em	bedded	Theory	and Lab							
OBJECTI	VES : understa	nd tha Re	osio con	conts in	Logico	nd Drad	ionto col	oulus				
	understa			-	•			leulus				
	understa			-								
	understa			-								
• To	understa	nd the Ba	asic con	cepts in	Graph tl	neory						
COURSE	OUTCO	MES (C	Os):									
Students co				able to								
CO1	Find the	summat	ion of tl	he giver	series lo	ogical e	quations	s and pr	edicate	calculus		
CO2	To deter	mine the	functio	ons of pe	ermutatio	on and c	ombina	tion.				
CO3	To unde	rstand th	e conce	pt of gr	oup theor	ry and a	nalysis	operatio	on of se	t operatio	ons.	
CO4	Apply 1	nowledg	ge and o	concept	s in find	ing the	derivat	ive of	given f	unction	and to f	ind the
	maxima	/ minima	a of the	given fi	unction u	ising lat	tices.					
CO5	Evaluate	e the pa	rtial / t	otal dif	ferentiat	ion and	maxin	na / mi	nima o	f a func	tion of	several
N/ ·	variable		•41	D	0.4							
Mapping o				_	1	1		DOG	DOA	DOID	DO11	DO1
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**											**
CO1 CO2	H	H			M	M			H	H		H
CO2 CO3	H H	H H			H M	L			M	Н		H L
CO4	н Н	н Н							M	н Н		L M
CO5	H	H				Μ			M	M M		H
H/M/L ind			f correl	ation 1	 H – Higł		Medium	 1. L – I		IVI		11
			8		8-			-,				
	s	~		SS		ii ve.	s		ject	lls		
	Basic Sciences	Engg Sciences	ş	Social Sciences	ore	Program Electives	Open Electives		Practical / Project	Internships Technical Skills		
ory	Scie	Scie	Humanities	Sci	Program core	mE	Elec		al/	Internships Technical S		Soft Skills
Category	sic	20	mai	cial	ogra	ogra	en I		actic	erns chni		ft SI
Ca	Ba	En	Hu	So	Prc	Prc	Op	•	\Pr	Int Te		So
						1				1		1
	N											

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BMA18008	DISCRETE MATHEMATICS	Ту	3	1/0	0/0	4

(Common to II yr. / III Sem. B.Tech (Full Time), I yr. / I Sem. B.Tech (Part Time) - CSE,IT) **OBJECTIVES:**

- To understand the Basic concepts in Logic and Predicate calculus
- To understand the Basic concepts in Combinatorics •
- To understand the Basic concepts in Group theory •
- To understand the Basic concepts in Lattices
- To understand the Basic concepts in Graph theory

UNIT I LOGIC

Statements - Truth Table - Connectives - Normal Forms - Predicate Calculus - Inference Theory.

COMBINATORICS UNIT II

Mathematical Induction - Pigeon Hole Principle - Principle of Inclusion and Exclusion - Recurrence Relations - Generating Functions.

UNIT III GROUPS

Basic Concepts – Groups – Subgroups – Homomorphism – Kernel – Cosets – Lagrange's theorem (simple theorems and problems).

UNIT IV LATTICES

Partial ordering - Posets - Hasse Diagram - Lattices - Properties of lattices - Sub lattices - Special lattices - Boolean Algebra(Definition & simple problems).

UNIT V GRAPHS

Introduction to Graphs - Terminology - Matrix representation of Graphs: Incidence matrix, Adjacency matrix - Graph Isomorphism - Connectivity - Euler and Hamiltonian Paths (simple theorems and problems).

TEXT BOOKS:

- 1. Veerarajan T., *Discrete Mathematics*, Tata McGraw Hill Publishing Co., (2008).
- 2. Tremblay J.P., Manohar R., Discrete Mathematical structures with applications to Computer science, Tata McGraw Hill Publishing Co., (2008).

REFERENCE BOOKS:

- 1. Kolman, Busby, Ross, Discrete Mathematical Structures, Pearson, (2014).
- 2. Kenneth Rosen, Discrete Mathematics and its applications (SIE), Tata McGraw Hill Publishing Co., (2007).

12 Hrs

12 Hrs

Total Hours: 60

12 Hrs

12 Hrs

12 Hrs



Subie	ct Code	e:	Subie	ect Name	•				Ty/	L	Τ/	P/R	C	
BIT18			Subje	DATA		CTURE	S AND)	Lb/		S.Lr			
				A	LGOR	ITHM	S		ETL	,	0121			
			Prere	quisite: 1	NIL				Ту	3	1/0	0/0	3	
L : Le	cture T	: Tuto				l Learn	ing P:	Project	R : Res	earch C:	Credits		1	
			y/Lab/	Embedde	ed Theo	ry and l	Lab	-						
OBJE	ECTIV													
٠			-								d binary ti	rees		
•										hash tab				
•			with s	everal su	ıb-quadı	ratic soi	ting alg	gorithms	sincludi	ng quicks	sort, merge	esort and	1	
-	heap				.11		1	1		1	· · · ·	- 4		
•									-		m spannin	g tree		
COU		Be familiar with various algorithm design methods and its application												
C01		SE OUTCOMES (COs) : (3- 5) Student will be able to choose appropriate data structure as applied to specified problem definition												
CO2		Student will be able to choose appropriate data structure as appred to specified problem definition Student will be able to handle operations like searching, insertion, deletion, traversing mechanism												
		on various data structures.												
CO3	Students will be able to apply concepts learned in various domains like DBMS, compiler													
	construction etc.													
CO4	Students will be able to use linear and non-linear data structures like stacks, queues, linked list etc													
CO5						0		-		ed in pro	blem solvi	ng.		
~ ~				comes wi						1	1			
COs/l	POs	PO	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO	PO12	
CO1		1 H	H	L	H	M	L	L	L	L	L	11 M	м	
CO1 CO2		п Н	<u>п</u> Н	H L	L I	M	L	M	L M	L H		M	M M	
CO2 CO3		H	M	H	H	H	M	L	M	H		M	M	
CO4		H	H	H	H	M	L	M	M	H	L	M	M	
CO5		H	M	Н	H	Н	M	L	Μ	H	L	Μ	M	
COs/	1	PSO	I	PSO2	P	SO3	P	SO4		PSO5		PSO		
PSOs		1												
CO1		Η		Η		L		L	H	Μ	Μ		L	
CO2		H		H		Μ		L	H	Μ	M		L	
<u>CO3</u>		H		M		L		L	H	<u>M</u>	<u> </u>	_	L	
CO4		H		H		L		L	H	H			L	
CO5	Lindi	H	trongt	M h of Cor	roletics	L , u i	Jigh M	L I Modi	H um, L-I		Μ		L	
11/1/1/		Laits S			i ciatiol	1 11-1	11g11, 1V	r- micul		2014				
			S	cial					iica					
			nce	Soc		S		t	chr					
	IJ	ş	cie	pu	~	tive	SS	jec	Te II					
	[030]	nce	S S	s ai	ore	lec	tive	Prc	ps / T Skill					
	Category	cie	erin	itie SS	n C	пE	lec	al /	shij	ills				
	0	c S	ine	nan nce	grar	grar	пE	tic	Internships / Technical Skill	Sk				
		Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Int	Soft Skills				
		щ		ΤS	<u>ч</u>	щ	0	Ц		\sim				
					•									



	2018 Regulation					
Subject Code	Subject Name	Ty/	L	Τ/	P/R	С
		Ľb/		S.Lr		
		ETL				
BIT18001	DATA STRUCTURES AND ALGORITHMS	Ту	3	1/0	0/0	3

OBJECTIVES:

- Master the implementation of linked data structures such as linked lists and binary trees
- Be familiar with advanced data structures such as AVL trees and hash tables.
- Be familiar with several sub-quadratic sorting algorithms including quicksort, mergesort and • heapsort
- Be familiar with some graph algorithms such as shortest path and minimum spanning tree
- Be familiar with various algorithm design methods and its application

LINEAR DATA STRUCTURES UNIT I

Algorithm Basics and Analysis-List-Stacks- Queues - Implementation and Applications - Singly linked list-Doubly linked Lists-Applications

UNIT II NON LINEAR DATA STRUCTURES

Trees - Binary Trees - Binary Search Tree Implementation - Tree Traversals - AVL trees - 2-3 tree, 2-3-4 tree.

UNIT III SEARCHING AND SORTING TECHNIQUES

Types of searching - Linear and Binary Searching Analysis - types of sorting-Quick Sort - Heap Sort -Merge Sort - Selection Sort - Bubble Sort - Insertion Sort - Sorting Comparison.

UNIT IV **GRAPH ALGORITHMS**

Graph Operations - DFS - BFS - Applications of Graphs - Minimum Cost Spanning Tree - Kruskal's Algorithm - Prim's Algorithm

UNIT V **ALGORITHM DESIGN METHODS**

Greedy method - Traveling Sales Person Problem - Divide and Conquer - Strassen's Matrix Multiplication - Dynamic Programming - Knapsack problem - Back Tracking - N Queens Problem .

Total Hours: 60

TEXT BOOKS :

Horowitz, E. Sahani, S. & Mehta. (2007) Fundamentals of Data Structures in C++, Galgotia. 1.

REFERENCE BOOKS:

1. Weiss Mark Allen (2007) Data Structures and Algorithm Analysis in C, (3rd ed.), Pearson

2. Horowitz, E. Sahni&SanguthevarRajasekaran.(2007) Fundamentals of Computer Algorithms, Galgotia **Publications**

12 Hrs

12 Hrs

12 Hrs

12 Hrs

12 Hrs



2018 Regulation

	r				2018 1	Regulat	10 n	r						
Subject Code:	:	Subject							Ty/	L	T		P/R	C
		OBJ	ЕСТ О				MMIN	G	Lb/		S.L	۲.		
BCS18002				WI	ГН C+-	F			ETL					
		Prerequ	isite: BI	ES18ET	2				Ту	3	0/	1 (0/0	3
L : Lecture T :						P:Pro	oject R	: Resea				I		L
Ty/Lb/ETL : T			-		•		5							
OBJECTIVE	S :													
• The st	udents	will be a	ble to d	istingui	sh OOP	feature	s with p	rocedu	ral Orien	ted a	nd an	alyze t	hese	
		eal worl					•					2		
• To ana	alyze ge	eneric da	ta type	for the	data typ	e indep	endent p	orogran	nming wh	ich r	elate	it to		
reusab						-	-	-	-					
• To und	lerstan	d the co	icepts o	f Java p	rograms	s and de	evelop b	asic ne	tworking	prog	rams	using J	lava	
COURSE OU	TCON	IES (CO	(3)	- 5)										
CO1	0	bject Or	iented F	Program	ming ar	nd to an	alyze ch	aracter	istics of (OOP				
CO2	Т	o impler	nent OC)P in va	rious ar	plicatio	ons							
CO3		iles & I/			1	1								
CO4		xception		ng										
CO5		o develo			using	C++								
Mapping of C					-		P()s)							
	Juise	outcom		Tiogra			103)							
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO	D10	PO11	PO	D12
CO1	Н	Η	Η	Μ	Η	Μ	Η	H	Μ	Η		Η	Η	
CO2	Η		Μ	L	Η	H	H	H	Μ	Μ		Н	Η	
CO3	Η	Η	Μ		Η	H	Μ	Μ	H	Η		Н	Η	
CO4	H	Н	Μ	L		Н	Η	Μ	Н	Η		Μ	Μ	
CO5	Н	Μ	L	Μ	Н	Н	Н	Н	Μ	L		Н	Η	
COs / PSOs	P	501	PS	02	PS	03	Р	SO4	P	SO5		Р	SO 6	
CO1	Н		Н		Μ		Н		H			Н		
CO2	H		M		H		H		M			H		
CO3	Μ		H		M		L		M			H		
CO4	H		H		M		H		M			H		
CO5	H		M		Μ		Н		H			H		
H/M/L indica		ength of		ation		h, M- N	Aedium	, L-Lo						
			_					Í						
		nce			ŝ		LL LL	. E						
	s	cie	nd es		tive	ş	jec	sd						
ıry	JCe	a a	s ar enc	ore	lect	ive	Pro	Internships						
egc	ciei	rin	Scie	C	Ε	ect	1/]	ern	lls					
Category	S S	nee	ani 1 5	ran	ran	Ε	ica	Intern Toohoi	Ski					
	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	F	Soft Skills					
	Bį	Ē	H. S		P1	Ō	P1		S				_	
				~										
	-	1	1	1	1	I	1			1			1	



2018 Regulation

	2010 Kegulation					
Subject Code	Subject Name	Ty/	L	Τ/	P/R	С
		Lb/		S.Lr		
		ETL				
BCS18002	OBJECT ORIENTED PROGRAMMING WITH C++	Ту	3	0/1	0/0	3

OBJECTIVES:

- The students will be able to distinguish OOP features with procedural Oriented and analyze these features to a real world object,
- To analyze generic data type for the data type independent programming which relate it to reusability.
- To understand the concepts of Java programs and develop basic networking programs using Java

UNIT I BASICS, TOKENS, EXPRESSIONS

Software Evolution, Procedure Oriented Programming, Object Oriented Programming Paradigm, Basic Concepts of OOP, Benefits of OOP, Object Oriented Languages, Features of OOP. How OOP Differ from POP. Applications of OOP, A Simple C++ Program, Structure of C++ Program. Tokens, Keywords, Identifiers and Constants, Basic Data Types, User Defined Data Types, Derived Data Types, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators.

UNIT II FUNCTIONS, CLASSES AND OBJECTS

Introduction of Classes, Specifying a Class, Defining a Member Functions, A C++ Program with Class Access Specifiers, Inline functions, Nesting of Member Functions, Memory Allocation for Objects, Static Data Members, Static Member Functions, Arrays of Objects, Objects as Function Arguments, Default Arguments, Const Arguments, Function Overloading, Friend Functions.

UNIT III CONSTRUCTORS AND DESTRUCTORS

Introduction, Constructors, Default constructors, Copy Constructors, Dynamic Constructors, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic initialization of Objects, Destructors.

UNIT IV INHERITANCE

Introduction to inheritance, Defining Derived Classes, Single Inheritance, Multiple Inheritance, Multi Level Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Abstract Classes, Constructors in Derived Classes, Containership, Operator overloading, Rules for Operator overloading, overloading of binary and unary operators.

UNIT V POINTERS, VIRTUAL FUNCTIONS AND POLYMORPHISM

Introduction to Memory Management, new Operator and delete Operator, Pointer to Objects, this Pointer, Pointers to Derived Classes, Polymorphism, Compile time polymorphism, Run time polymorphism, Virtual Functions, Pure Virtual Functions, Virtual Base Classes, Virtual Destructors.

TEXT BOOK:

1. E.Balagurusamy, "Object Oriented Programming in C++", 6th ed., Tata McGraw-Hill, 2013 **REFERENCE BOOKS:**

- 1. K.R.Venugopal, "Mastering C++", published by Tata McGraw-Hill. -2013, Second Edition.
- 2. Rohit Khurana, "Object Oriented Programming With C++", Vikas Publishing House- 2014, Second Edition.
- 3. Robert Lafore, "Object-Oriented Programming in C++", Sams Publishing-2002, Fourth Edition

12 Hrs

12 Hrs

12 Hrs

12 Hrs

12 Hrs

Total Hours: 60



					2018	8 Regul	ation	-						
Subject Code BEC18I03	: Su	bject Na INFO	ame : RMATIO	ON TH	EORY	AND (CODIN	G	Ty/ Lb/ ETL	L	T/ S.L		/R	С
	Pre	erequisi	te: NIL						Ту	3	1/0) 0	/0	4
L : Lecture T T/L/ETL : Th			Lr : Supe			g P:P	roject]	R : Res	earch C	: Credi	ts			
DeriExpl	ve equa ve sour ain var	ce codi ious co	or entrop ng & cha des like l	innel co inear bl	ding for	r shann	on's.	es & C	onvoluti	ion Co	des.			
COURSE O														
CO1			ne basic c relation a	-		ormatio	n theory	y, sourc	e codin	g, char	nnel co	oding a	nd cł	nannel
CO2	Under	stand th	ne encodi	ng conc	epts of	various	s codes							
CO3	Imple	ment the	e encode	r and de	coder o	of block	code o	r convo	olutional	l code				
Mapping of	Course	Outco	mes with	n Progr	am Ou	tcomes	(POs)							
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9		PO 1 10	PO11	PO	12
CO1	Η	Μ	Μ	L	Μ	L	L	L	Μ]	L 1	Ĺ	L	
CO2	Η	Н	Н	L	L	Μ	L	L	Μ]	M 1	L	Μ	
CO3	Η	Μ	Н	L	Μ	L	L	L	Η]	M 1	L	Μ	
COs / PSOs	PS	01	PSO	02	PS	03	PS	SO4	I	PSO5		F	PSO6	
CO1	Н		Μ		L		Н		L]	Ĺ		
CO2	Η		Н		L		Μ		Μ]	L		
CO3	Η		Н		L		L		Μ]	L		
H/M/L indic	ates St	rength	of Corre	elation	H- Hi	igh, M-	Mediu	m, L-I	JOW				r	
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills					
F														



Subject Code	2018 Regulation Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BEC18I03	INFORMATION THEORY AND CODING	Ту	3	1/0	0/0	4

OBJECTIVES:

- Derive equations for entropy & mutual information
- Derive source coding & channel coding for shannon's.
- Explain various codes like linear block codes, Cyclic codes & Convolution Codes.

UNIT I INTRODUCTION TO INFORMATION THEORY

Definition of information -Information Measure and Entropy – properties of Entropy- Differential Entropy-Mutual Information-Information source- Markov source.

UNIT II SOURCE CODING

Introduction to Lossless coding-kraft McMillan Equality-shannon's source coding theorm -shannon fano coding- Huffman coding- Arithmetic coding – Lempel ziv coding.

UNIT III CHANNEL CAPACITY AND CODING

Introduction to channel capacity- channel capacity of a Binary Symmetric Channel- channel capacity of a Binary Erasure Channel- shannon's channel coding theorem – bandwidth - signal to noise trade off- channel capacity theorem.

UNIT IV LINEAR BLOCK AND CYCLIC CODES

Binary block code- Linear block code- Systematic LBC- Encoder for LBC-Syndrome Decoding of LBC – Hamming Codes - cyclic codes- Systematic cyclic codes - generator polynomial of cyclic code- parity check polynomial of cyclic codes- encoder for cyclic codes- decoder for cyclic code.

UNIT V CONVOLUTION CODES

Time domain and frequency domain- code tree, trellis and state diagram- decoding of convolution codesviterbi decoding algorithm- trellis coded modulation- encoder for TCM- decoder for TCM

TEXT BOOKS:

- 1. J.S.Chitode (2009) "Information Theory and Coding", Technical publications
- 2. R. Avudaiammal (2010) "Information Coding Techniques", Tata McGraw Hill Education pvt Ltd

REFERENCE BOOKS :

- 1. Ranjan Bose (2008) "Information theory, coding and cryptography", Tata McGraw Hill Publishing Company Limited
- 2. Roberto Togneri and Christopher J.S. desilva (2003) "Fundamentals of Information Theory and Coding Design", Chapman and Hall/CRC

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

12 Hrs

12 Hrs

12 Hrs

12 Hrs

12 Hrs

Total Hours: 60



2018 Regulation

					2018	Regul	ation						
Subject Code BEC18I01	e: Su	bject Na		DIGIT	'AL SY	STEM	S	L	у/ b/ ГL	L	T/ S.Lr	P/R	C
	Pre	ereauisi	te: BES	8001				1	γ.	3	0/0	0/0	3
L : Lecture T Ty/Lb/ETL :	: Tuto	rial S.	Lr : Supe	rvised		•	roject I					0,10	
OBJECTIV	ES :												
•]	Го intro	duce nu	mber sys	stems a	nd code	s and it	s conve	rsions					
•]	Го intro	duce B	oolean al	gebra a	nd its ap	oplicati	ons in d	igital s	ystems				
•]	Го intro	duce th	e design	of varic	ous com	binatio	nal digit	tal circu	iits usin	g logic	gates		
•]	Fo bring	g out the	e analysis	s for syn	nchrono	ous and	asynchr	onous	Sequent	ial circu	uits		
COURSE O	UTCO	MES (COs):(3	3- 5)									
CO1	Acqu	Acquired knowledge about number systems and its conversions Acquired knowledge about boolean algebra											
CO2	Acqu	ired kn	owledge	about b	oolean	algebra							
CO3	Abili	ty to ide	entify, an	alyze &	c design	o combi	national	l circui	S				
CO4	Abili	ty to ide	entify &	analyze	synchr	onous &	& async	hronou	s circuit	s			
Mapping of	Course	Outco	mes with	ı Progr	am Ou	tcomes	(POs)						
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	0 P	011	PO12
CO1	Н	L	Μ	L	L	L	L	L	L	Μ	L		L
CO2	Н	Μ	L	L	L	L	L	L	L	L	L		L
CO3	Μ	Μ	Η	L	L	Μ	L	L	Μ	Μ	L		L
CO4	Μ	Μ	Н	L	L	Μ	L	L	Μ	Μ	L	,	L
COs / PSOs	PS	01	PSO	02	PS	03	PS	04	P	SO5		P	506
CO1	L		Н		L		L		М		L		
CO2	L		Н		L		L		М		L		
CO3	Н		Μ		L		L		М		N	I	
CO4	Н		Μ		L		L		М		N	I	
H/M/L indic	ates St	rength	of Corre	elation	H- Hi	igh, M-	Mediu	m, L-I	/OW				
			Sciences					al Skill					
Category	Basic Sciences	Engineering Sciences	Humanities and Social	Program Core	Program Electives	Open Electives	Practical / Project	Internshins / Technical Skill ft Skills					
	Basic S		Humar	Progra	Progra	Open E	Practic	Internsh Soft Skills					
		~											



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BEC18I01	DIGITAL SYSTEMS	Ту	3	0/0	0/0	3

OBJECTIVES:

- To introduce number systems and codes and its conversions
- To introduce Boolean algebra and its applications in digital systems
- To introduce the design of various combinational digital circuits using logic gates
- To bring out the analysis for synchronous and asynchronous Sequential circuits

UNIT I NUMBER SYSTEMS

Review of Decimal, Binary, Octal And Hexadecimal Number Systems -Number Conversions - Signed Magnitude form – 1's and 2's Complement – Binary weighted codes- Binary arithmetic – codes – BCD code, Gray code, Excess-3 Code.

UNIT II **BOOLEAN ALGEBRA**

Binary logic Functions- Boolean laws - De Morgan's Theorems, Sum Of Products - Product Of Sums karnaugh map- Quine McCluskey Method.

UNIT III **COMBINATIONAL LOGIC**

Logic gates - AND, OR, NOT, NOR, NAND and EX-OR Gates - Half adder - Full adder- Half subtractor-Full subtractor - Multiplexer - Demultiplexer - Encoder - Decoder - Code converters - PAL- PLA.

UNIT IV SYNCHRONOUS SEQUENTIAL LOGIC

Latches-R-S- Flip Flop, S-R Flip Flop, D Flip Flop, JK Flip Flop, T Flip-Flop - Master slave Flip-Flop -Counters – Up Down counters- Binary counters-Ring counter- Shift Registers.

ASYNCHRONOUS SEQUENTIAL LOGIC UNIT-V

Asynchronous counters - Decade counters - State diagram - State Table - State Reduction - State Assignment- Excitation Table-Analysis of Asynchronous sequential circuits - Design of ASynchronous Sequential Circuits.

TEXT BOOKS:

- 1. Charles H. Roth & Larry L.Kinney, "Fundamentals of Logic Design", Cengage Learning, 7th Edition.
- 2. M. Morris Mano & Michael D.Ciletti (2008) Digital Design. Pearson Education
- 3. Thomas.L.Floyd (2013) "Digital Fundamentals", 10th Edition Pearson Education

REFERENCE BOOKS:

- 1. Ronald J. Neal S. Gregory L (2009), "Digital Systems", 10th Edition, Pearson Prentice Hall.
- 2. R P Jain, (2010), "Modern Digital Electronics", 4th Edition, Tata Mcgraw Hill Ed. Pvt. Ltd.

9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs

Total Hours: 45



Subject Code: BHS20ET5	Subject Name: UNIVERSAL HUMAN VALUES 2: UNDERSTANDING HARMONY	L	T/SLr	P/R	С
	Prerequisite: None, UHV1 (Desirable)	2	1/0	0/0	3
L:LectureT :Tutorial	SLr: Supervised Learning P:Project R:ResearchC:Cre	ditsT/	L/ETL:		
Theory/Lab/Embedd	ed Theory and Lab				

OBJECTIVES:

Human Values Courses: During the Induction Program, students would get an initial exposure to human values through Universal Human Values – I. This exposure is to be augmented by this compulsory full semester foundation course.

- 1. Development of a holistic perspective based on self- exploration about themselves (human being), family, society and nature/existence.
- 2. Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence
- 3. Strengthening of self-reflection.
- 4. Development of commitment and courage to act.

COURS	EOUTCON	MES(Cos)):(3-5)]	The stud	lents w	ill be al	ole to									
CO1	Relate self							life								
CO2	Associate	human re	lationship	p and na	ature to	handle	proble	ms and pi	ovide si	ustainabl	e solutio	ns				
CO3	Develop c	ritical abi	lity and e	engage i	n reflec	tive an	d indep	endent T	hinking							
CO4	Show com		-				-		0							
CO5	Apply Hu	man value	s in day	to day s	etting i	n real li	fe									
Mapping	g of Course	Outcom	es with F	Program	n Outc	omes(P	Os)									
COs/PO	s PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12				
CO1			1	1		2	1		1	1		2				
CO2			2	2	1	2	3	1		2		2				
CO3		$\begin{array}{ c c c c c c c c c c c c c c c c c c c$														
CO4			2		1	1	1	3	1	1		3				
CO5			1			2	1	2	1	1		3				
	PSOs		PSO1			PSO2			PSO3		PS	604				
	01															
	O2															
	03															
	O4															
	05															
3/2/1indi	catesstren	gthofcorr	elation3	–High,	2–Med	ium,1–	Low					. <u> </u>				
Category	BasicSci ences	EnggSci ences	Humaniti es	& SocialS ciences	Program	Program Electives		ctives	Practical /Project		Internship s /	SoftS kills				
				\checkmark												



2018 Regulation

BHS20ET5 Universal Human Values 2: Understanding Harmony 2 1/0 0 /03

UNIT I

Introduction - Need, Basic Guidelines, Content and Process for ValueEducation

Purpose and motivation for the course, recapitulation from Universal HumanValues-I Self-Exploration-what is it? Its content and process; 'Natural Acceptance'andExperientialValidation-astheprocessforself-exploration. ContinuousHappinessandProsperity-AlookatbasicHuman Aspirations - Right understanding, Relationship Physical Facilityand the basic requirementsforfulfilmentofaspirationsofeveryhumanbeingwiththeir correctpriority UnderstandingHappinessandProsperitycorrectly-Acriticalappraisalof the currentscenario Methodtofulfiltheabovehumanaspirations:understandingandliving in harmony atvariouslevels.

Include practice sessions to discuss natural acceptance in human being as the innate acceptance forliving with responsibility (living in relationship, harmony and co-existence) rather than asarbitrariness in choice based on liking-disliking.

UNIT II

Understanding Harmony in the Human Being - Harmony in Myself!

Understanding human being as a co-existence of the sentient 'I' and the material 'Body'.- Understanding the needs of Self ('I') and 'Body' - happiness and physical facility. - Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer). - Understanding the characteristics and activities of 'I' and harmony in 'I' - Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physicalneeds, meaning of Prosperity in detail - Programs to ensureSanyam and Health.

Include practice sessions to discuss the role others have played in making material goods available tome. Identifying from one's own life.

Differentiate between prosperity and accumulation. Discussprogram for ensuring health vs dealing with disease

UNIT III

Understanding Harmony in the Family and Society- Harmony in Human-HumanRelationship

Understanding values in human-human relationship; meaning of Justice (nine universal values inrelationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect asthe foundational values of relationship - Understanding the meaning of Trust; Difference between intention and competence - Understanding the meaning of Respect, Difference between respect and differentiation; the othersalient values in relationship - Understanding the harmony in the society (society being an extension of family): Resolution,Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals - Visualizing a universal harmonious order in society- Undivided Society, Universal Order- fromfamily to world family.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value relationships. Discuss with scenarios. Elicit examples from students' lives.

UNIT IV

Understanding Harmony in the Nature and Existence - Whole existence asCoexistence

Understanding the harmony in the Nature - Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulationin nature - Understanding Existence as Co-existence of mutually interacting units in all-pervasive space - Holistic perception of harmony at all levels of existence - Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" canbe used), pollution, depletion of resources and role of technology etc.

UNIT V

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values



Implications of the above Holistic Understanding of Harmony on ProfessionalEthics

Natural acceptance of human values - Definitiveness of Ethical Human Conduct -Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order -Competence in professional ethics: a. Ability to utilize the professional competence foraugmenting universal human order b. Ability to identify the scope and characteristics of peoplefriendlyand eco-friendly production systems, c. Ability to identify and develop appropriatetechnologies and management patterns for above production systems. - Case studies of typical holistic technologies, management models and production systems -Strategy for transition from the present state to Universal Human Order: ((a) At the level ofindividual: as socially and ecologically responsible engineers, technologists and managers, (b)Atthe level of society: as mutually enriching institutions and organizations -Sum up

Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions e.g. Todiscuss the conduct as an engineer or scientist etc.

Text Book

1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books,New Delhi, 2010

Reference Books

- 1. Jeevan Vidya: EkParichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
- 2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
- 3. The Story of Stuff (Book).
- 4. The Story of My Experiments with Truth by Mohandas Karamchand Gandhi.
- 5. Small is Beautiful E. F Schumacher.
- 6. Slow is Beautiful Cecile Andrews
- 7. Economy of Permanence J C Kumarappa
- 8. Bharat Mein Angreji Raj PanditSunderlal
- 9. Rediscovering India by Dharampal
- 10. Hind Swaraj or Indian Home Rule by Mohandas K. Gandhi
- 11. India Wins Freedom Maulana Abdul Kalam Azad
- 12. Vivekananda Romain Rolland (English)
- 13. Gandhi Romain Rolland (English)



Subject Code BIT18L01	D		TRUCT	LA		LGOR	ITHMS	ET	o/ I Ľ	S. I		
L : Lecture T Ty/Lb/ETL :	: Tutor	ial S.		ervised		0	roject F	R : Rese		9,	0 3/0	1
appro • To in • To ar	rengthe bach. troduce halyze S	e object Space ai	oriented nd Time	concep Comple	ts in C+	• • • •		e charac	eteristics	of an ob	ject-orier	ted
COURSE O		MES (C	_Us):(3- 3)								
CO1	-		constitu oject-orie		•		. .	-	•	ng and ic	lentify po	tential
CO2	Apply	/ an obj	ect-orien	ited app	roach to	o develo	ping ap	plicatio	ns of va	rying co	mplexities	5
CO3	Descr	ibe the	basic op	erations	on arra	ys, lists	, stacks	and qu	eue data	structure	es	
Mapping of	Course	Outco	mes wit	h Progr	am Ou	tcomes	(POs)					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Η	Н	L	М	L	Μ	L	L	Μ	М	М	М
CO2	Η	Н	L	Μ	L	Μ	Н	L	Μ	L	Н	Μ
CO3	Η	Μ	L	Μ	L	Μ	L	L	Μ	Μ	Μ	Μ
COs / PSOs	PS	01	PS	02	PS	603	PS	604	P	SO5	P	SO6
CO1	Н		Η		L		L		Μ	L	H	Μ
CO2	Η		L		Μ		L		Н	L	L	Μ
CO3	Μ		Μ		L		Н		L	Μ	Н	L
H/M/L indic	ates St	rength	-	elation	H- Hi	igh, M-	Mediu	m, L-L	0W			
Category	iences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	SIIIS			
	Basic Sciences	Enginee	Human	Prograi	Progra	Dpen]	Practic	Inte	SILING HOC			



	2018 Regulation					
Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18L01	DATA STRUCTURES AND ALGORITHMS LAB	Lb	0	0/0	3/0	1

OBJECTIVES:

- To strengthen their problem solving ability by applying the characteristics of an object-oriented approach.
- To introduce object oriented concepts in C++ and Java.
- To analyze Space and Time Complexity.

EXERCISES:

- 1) Operation on arrays insertion and deletion
- 2) Linked lists-creation, insertion, deletion of single, double and circular lists.
- 3) Stack- operations using arrays and linked lists.
- 4) Infix to postfix conversion
- 5) Evaluation to postfix expression.
- 6) Queue- operations using arrays and linked lists.
- 7) Dequeue, circular-operations
- 8) Binary tree traversals- In order, pre order, post order using recursion
- 9) Binary tree traversals- In order, pre order, post order using non recursion
- 10) Linear and binary search
- 11) Sorting Selection Sort, Quick sort, Heap Sort and Merge Sort.
- 12) Addition, multiplication of sparse matrices
- 13) Polynomial addition and multiplication
- 14) Depth first search of a graph
- 15) Analyze Space and Time Complexity for Sorting and Searching.



Subject Code: BCS18L02	Su	ibject N OBJE	CT OR		ED PR(C++ LA		MMIN	G	Ty/ Lb/ ETI	/]	L	T/ S.Lı		′R	С
	Pr	erequis	ite: BES	S18ET2	2				Lb	(0	0/0	3.	/0	1
L : Lecture T : T Ty/Lb/ETL : Th			-		-	-	oject R	R : Res	search	C: C	redi	ts			
 OBJECTIVES To deve To Strenproblem 3. To G 	elop ski ngthen 1 ain kno	the abil wledge	ity to ic	lentify	and app	bly the s	uitable	data s	structu				n real v	vorle	đ
COURSE OUT	-	`	<i>,</i> ,	,			1	-ff: -:-		£ 410 0	1.40		4		
CO1			0		ze the t		•		•				ure		
CO2				•	ppropria				•	•	olem				
CO3		-		-	on the a			ata str	ucture	es					
Mapping of Co				0			、 <i>,</i>				1				
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8		PO9	PC)10	PO11		D12
CO1	H	H	Μ	H	Н	Μ	H	Η		I	Η		H	H	
CO2	H	M	H	H		H	Μ	H		H	H		M	H	
CO3 COs / PSOs	M	Н 01	H PS	H	H	L 03	M	H SO4		H Do	н 505		H	Н Об	
CO3/ PSOS	H H	01	H H	02	H H	03	H F	504		H I	505		H PS	00	
CO1 CO2	н Н		п М		н Н		п М			1 1			п Н		
CO2 CO3	H		H		M		H			I I			M		
H/M/L indicate		ngth of		ation		vh. M-	Mediu	m. L-		.1			IVI		
		-9 01													
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills						
							~								



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18L02	OBJECT ORIENTED PROGRAMMING WITH C++ LAB	Lb	0	0/0	3/0	1

OBJECTIVES:

- To develop skills to design and analyze simple linear and non linear data structures
- To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
- 3. To Gain knowledge in practical applications of data structures
- 1. Simple C++ Programs to Implement Various Control Structures.
 - a. If statement
 - b. Switch case statement and do while loop
 - c. For loop
 - d. While loop
- 2. Programs to Understand Structure & Unions.
 - a. Structure
 - b. Union
- 3. Programs to Understand Pointer Arithmetic.
- 4. Functions & Recursion.
 - a. Function
 - b. Recursion
- 5. Inline Functions.
- 6. Programs to Understand Different Function Call Mechanism.
 - a. Call by reference & Call by Value
- 8. Programs to Understand Storage Specifiers.
- 8. Constructors & Destructors.
- 9. Use of "this" Pointer, using class
- 10. Programs to Implement Inheritance and Function Overriding.
 - a. Multiple inheritances –Access Specifiers
 - b. Hierarchical inheritance Function Overriding /Virtual Function
- 11. Programs to Overload Unary & Binary Operators as Member Function & Non Member Function.
 - a. Unary operator as member function
 - b. Binary operator as non member function
- 12. Programs to Understand Friend Function & Friend Class.
 - a. Friend Function
 - b. Friend class
- 13. Programs on Class Template



2018 Regulation

					2018	Regula	ation					1				
Subject Cod BEC18IL1	e: Si	ıbject N	ame : DIGIT	AL SY	STEMS	S LAB		Ty/ Lb/ ETL	Ι	_	T/ S.Lr	P/R	C			
	Pı	rerequisi	te: BES	18001				Lb	()	0/0	3/0	1			
L : Lecture T Ty/Lb/ETL			·			•	Project	R : Re	searc	h C:	Credits					
OBJECTIV	'ES :															
•	To intr	oduce nu	umber sy	stems a	nd code	es and it	ts conve	ersions								
•	To intr	oduce B	oolean al	gebra a	nd its a	pplicati	ions in o	digital	syste	ems						
•	To intr	oduce th	e design	of vario	ous com	nbinatio	onal dig	ital cire	cuits	using	g logic ga	ates				
•	To brin	g out th	e analysi	s for sy	nchrono	ous and	asynch	ironous	s Seq	uenti	al circuit	S				
COURSE C	OUTCO	OMES (C O s) : (3- 5)												
CO1	1	Acquired	l knowle	dge abo	out num	ber syst	tems an	d its co	onvei	sions	3					
CO2		•	l knowle	0		0										
CO3		•	o identify			Ç										
CO4	1	Ability to	o identify	/ & ana	lyze syı	nchrono	ous & a	synchr	onou	s circ	uits					
Mapping of	Cours					itcomes	s (POs)						_			
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P 0 9	РО	10	PO11	PO12			
CO1	Н	L	Μ	L	L	L	L	L	L	Μ		L	L			
CO2	Н	Μ	L	L	L	L	L	L	L	L		L	L			
CO3	Μ	Μ	Н	L	L	Μ	L	L	Μ	Μ		L	L			
CO4	Μ	Μ	Н	L	L	Μ	L	L	Μ	Μ		L	L			
COs / PSOs	P	501	PSO	02	PSO3		PS	PSO4		PS	05	P	SO 6			
CO1	L		Н		L		L		Μ	[L				
CO2	L		Н		L		L		Μ	[L				
CO3	Η		Μ		L		L		Μ	[Μ				
CO4	Η		Μ		L		L		Μ			Μ				
H/M/L indi	cates S	trength	of Corr	elation	H-H	igh, M	- Medi	um, L-	Low	1		1	1			
Category	Basic Sciences	Engineering Sciences Humanities and Social Sciences		Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical	Soft Skills							
	Basic S	Engine	Human Science	Prograt	Prograt	Open E	▲ Practica	Inter	Soft Sk							



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BEC18IL1	DIGITAL SYSTEMS LAB	Lb	0	0/0	3/0	1

OBJECTIVES:

- To introduce number systems and codes and its conversions
- To introduce Boolean algebra and its applications in digital systems
- To introduce the design of various combinational digital circuits using logic gates
- To bring out the analysis for synchronous and asynchronous Sequential circuits
- 1. Verification of Truth tables of Logic Gates
- 2. Implementation of Boolean function
- 3. Implementation of Half and full Adders
- 4. Implementation of Half and full Subtractors
- 5. Implementation of Multiplexers
- 6. Implementation of Demultiplexers
- 7. Implementation of Encoder
- 8. Implementation of Decoders
- 9. Verification of Flip Flops
- 10. Implementation of Shift Registers
- 11. Implementation of Counters
- 12. Study of A to D Converters



SEMESTER – IV

~					SENIES	TER –		<u> </u>	I –			
Subject Co BMA1801				: TICS FC ENGIN		IPUTE	R	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
		Prerequ	uisite : N	None				Ту	3	1/0	0/0	4
L : Lecture T/L/ETL :							t R : R	esearch	C: Cre	dits		I
OBJECTI												
		nd the Ba	asic con	cepts in	Statistic	s						
		nd the Ba		-								
		nd the Ba		-								
		nd the Ba		-		-		5				
• To	understa	nd the Ba	isic con	cepts in	Samplin	g theory	1					
COURSE		MES (C	$(0_{\mathbf{s}}) \cdot$									
Students co				able to								
CO1		e summat		-								
CO2	To dete	rmine the	functio	ons of pe	rmutatio	on and co	ombinat	ion.				
CO3	To unde	erstand th	e conce	pt of cor	elation	operatio	ns.					
CO4		knowledg						ive of	given f	inction	and to f	ind the
001	· · ·	/ minima		-		•			B- , •			
				-		_						
CO5		e the par	rtial / t	otal dif	ferentiat	ion and	maxin	na / mi	nima o	f a func	ction of	several
Mapping o	variable of Course		nes with	Progra	m Outo	comes (I	POs)					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Н	Н			М	Μ			Н	Н		Н
CO2	Н	Н			Н	L						Н
CO3	Н	Н			Μ				Μ	Н		L
CO4	Н	Н			L				Μ	Н		Μ
CO5	Н	Н				Μ			Μ	М		Н
H/M/L ind	licates st	rength of	f correl	ation I	I – Higł	n, M – N	ledium	, L – L	ow			
			<u> </u>							<u> </u>		
			Social			SS			t.			
	Se	S	s S			Program Electives	es		Practical / Project	ills		
	Basic Sciences	Engg Sciences	Humanities &		Program core	Elec	Open Electives		/ Pri	Internships Technical Skills		s
ory	Sci	Scie	niti	ses	s ma	m]	Ele		cal	Internships Technical S		Soft Skills
Category	sic	00 00	ma	Sciences	31gc)gr	en		actio	ern chn		ft S
Ca	Ba	En	Hu	Sci	Prc	Prc	Ob	I	Pré	Int Te		So



Subject Code	Subject Name	Ty/ Lb/ ET	L	T/ S.Lr	P/R	С
BMA18016	STATISTICS FOR COMPUTER ENGINEERS	Ту	3	1/0	0/0	4

(Common to III yr. / V Sem. B.Tech (Full Time), I yr. / II Sem. B.Tech (Part Time) – CSE,IT)

OBJECTIVES:

- To understand the Basic concepts in Statistics •
- To understand the Basic concepts in Probability •
- To understand the Basic concepts in Correlation
- To understand the Basic concepts in Probability distributions
- To understand the Basic concepts in Sampling theory •

BASICS OF STATISTICS UNIT I

Variables – Uni-variate Data – Frequency Distribution – Measures of Central Tendency – Mean – Median – Mode - Quartiles - Measures of Dispersion - The Range - Quartile Deviation - Standard Deviation -Relative Measures of Dispersion - Coefficient of Variation - Quartile Coefficient of Variation.

UNIT II **PROBABILITY AND RANDOM VARIABLE**

Axioms of Probability - Conditional probability - Total probability - Baye's Theorem - Random variable - Probability mass function - Probability density function - Properties - Moments (Definition and simple problems).

UNIT III **CORRELATION & REGRESSION**

Measures of Skewness & Kurtosis – Bi-variate data – Applications of Correlation: Karl Pearson's Coefficient of Correlation - Rank Correlation: Spearman's Rank Correlation - Linear Regression.

UNIT IV STANDARD DISTRIBUTIONS

Binomial - Poisson - Geometric - Uniform - Exponential - Normal distributions.

UNIT V TESTING OF HYPOTHESIS

Tests of Significance - Large Sample Tests - Mean - Proportions - Small Sample Tests - t, F, Chi-square Tests: Independence of Attributes, Goodness of Fit.

TEXT BOOKS:

1. Veerarajan T., Probability, Statistics and, Random Processes, Tata McGraw Hill Publishing Co., (2008).

2. Gupta S.C., Kapoor V.K., Fundamentals of Mathematical Statistics, S.Chand & Co., (2007). **REFERENCE BOOKS:**

- 1. Singaravelu, Probability and Random Processes, Meenakshi Agency, (2017).
- 2. Richard Johnson A., Miller & Freund's Probability and statistics for Engineers (9thed), Prentice Hall of India, (2016).

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

12 Hrs

12 Hrs

12 Hrs

12 Hrs

12 Hrs

Total no. of hrs: 60



Subject Code BCS18004	: S	ubject Na DATAI	ame : BASE M	ANAG	EMEN	T SYST	rems		Ty/ Lb/ ETL	L	T/ S.Lı	P/R	C
	P	rerequisi	te: BCS1	8001					Ту	3	0/1	0/0	4
L : Lecture T Ty/Lb/ETL :			-			•	roject R	R : R	esearc	h C: C	Credits		
 OBJECTIVI To under To study network n To develo concurrent 	stand the ph models op an t	iysical ar s.	nd logica	l databa	ise desig	gns, dat	abase m	ode	ling, re	lation	al, hierai	chical, a	nd
COURSE O	UTCO	OMES (COs):(3	3- 5)									
CO1		• Unde	erstand th	ne most	fundan	nental D	BMS co	once	epts and	ł tech	niques		
CO2		• Lear	n techniq	ues req	uired fo	or buildi	ng, mai	ntai	ning, a	nd qu	erying da	tabases.	
CO3		• Desi	gn Datab	ases for	r applic	ations							
Mapping of	Cours	e Outco	mes with	n Progr	am Ou	tcomes	(POs)						
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P 0 8	PO9		PO10	PO11	PO12
CO1	Н	Μ	Μ	L	Μ	Н	М	Μ	Μ	[Μ	Μ	Н
CO2	M	H	M	M	H	M	M	M	H		L	L	M
CO3	Н	Μ	Н	Н	М	М	L	L	Μ	[L	М	Н
COs / PSOs	P	SO1	PS	02	PS	03	PSO4			PSO5	5	P	506
CO1		H	Н	[I	H	Μ			Н			H
CO2		Μ	N	[l	H	L			М			М
CO3		Μ	H			M	Μ			Н			H
H/M/L indic	ates S	trength	of Corre	lation	H- Hi	igh, M-	Mediu	m, I	L-Low		1	[
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical	Soft Skills				
-				~									



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18004	DATABASE MANAGEMENT SYSTEMS	Ту	3	0/1	0/0	4

OBJECTIVES:

- To understand the different issues involved in the design and implementation of a database system.
- To study the physical and logical database designs, database modeling, relational, hierarchical, and network models.
- To develop an understanding of essential DBMS concepts such as: database security, integrity, and concurrency.

UNIT I FUNDAMENTALS OF DATABASE

Introduction - Purpose of database systems - Data Abstraction -Data models - Instances and schemas -Data Independence - DDL - DML - Database user - ER model - Entity sets- keys - ER diagram relational model - structure - relational algebra- relational calculus- views

UNIT II SQL

SQL - QBE - level – Basic Structure – various operations – relational database design – problems in the relational database design - normalization - normalization using functional - Multivalued join dependence

FILE STRUCTURE, INDEXING & HASHING UNIT III

File and system structure - overall system structure - file transaction - data dictionary - indexing and hashing basic concepts and B+ tree Indices - static and dynamic hash functions

UNIT IV QUERY PROCESSING AND TRANSACTIONS

Overview - Measures of Query Cost - Selection Operation - Sorting - Join Operation - Transaction Concept - A Simple Transaction Model - Storage Structure - Serializability

UNIT V CONCURRENCY CONTROL AND RECOVERY SYSTEM **12 Hrs**

Lock-Based Protocols - Deadlock Handling - Timestamp-Based Protocols - Validation-Based Protocols -Failures Classification - Storage - Recovery and Atomicity - Recovery Algorithm - Buffer Management

TEXT BOOKS:

1. Abraham, Silberschatz. Henry, F. K.: Sudharshan, S. (2013) Database System Concepts (6thed.) Tata McGraw Hill, New Delhi

REFERENCE BOOKS:

- 1. Ramez, E. Shamkant, B. Navathe (2008) Fundamentals of database systems (5th ed.), Pearson Education
- 2. Date, C. J, (2012) An Introduction to Database Systems (8^{th} ed.), Pearson Education

12 Hrs

12Hrs

12 Hrs

12 Hrs

Total Hours: 60



Subject Code BIT18002	: Su	bject Na SYST	ame : EM SOI		RE ANI STEM	D OPE	RATIN	G	Ty/ Lb/ ET	L	T/ S.L r	P/R	C			
									L		1					
	Pr	erequisi	te: NIL						Ty	3	0/1	0/0	4			
L : Lecture T	': Tuto	rial S.	Lr : Supe	ervised	Learnir	ng P:F	roject	R : Res	earch C	Credi	ts		-1			
T/L/ETL : Th		.ab/Emb	bedded T	heory a	nd Lab											
OBJECTIV	ES :															
•			e of the	U U		•		ware of	a comp	uter sy	stem s	uch as				
			Compile													
•			apply co				rating s	ystems,	such as	Syste	m calls	, Inter p	process			
			ion and j													
•			l apply D				inageme	ent, Pro	cessor a	nd Dis	sk scheo	duling,	storage			
COURSE O			and app		s on Un	11X.										
COURSE O					1166 200	ociatad	with or	h system software and operating systems								
CO1 CO2			various	<u> </u>						<u> </u>						
C02			iar with									nomza	.1011			
C04						,		Ū				entation	disk			
01		Understanding issues related to file system management and I/O Management.							liuce		mprenik	manon	, and			
Mapping of							(POs)									
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO	10 P	011	PO12			
CO1	Н	Μ	Μ	Μ	L	L	L	L	L	L	L]	L			
CO2	Η	Н	Н	Μ	Μ	Μ	Η	L	L	Μ	Μ	[]	M			
C03	H	Μ	Μ	Μ	L	L	Μ	Μ	L	L	L]	М			
C04	Μ	Μ	L	L	Н	Μ	Μ	L	L	L	Μ		М			
COs /	PS	501	PSC	02	PS	03	PS	SO4	P	SO5		PSC)6			
PSOs										_						
CO1	H		H		M		M		L	L	L		L			
CO2	Μ		M		L		L		H	M	M		M			
C03	L		L		M		M		M	L	M		M			
C04	H	man ath	M			iah M	Madia	T T	L	H	Μ		M			
H/M/L indic	ates 5	rengin	of Corre		<u> </u>	ign, Mi	· Mean	ım, L-I	20W							
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	n Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	ills							
Ŭ	Basic S	Engineering S Humanities ar Sciences			Progra	Open F	Practic	Intern	Soft Skills							
				~												



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18002	SYSTEM SOFTWARE AND OPERATING SYSTEM	Ту	3	0/1	0/0	4

OBJECTIVES:

- To view some of the major tasks of the system software of a computer system such as Assemblers, Compilers, Loaders and Linkers.
- To study and apply concepts relating to operating systems, such as System calls, Inter process Communication and process management.
- To study and apply Deadlocks, Memory management, Processor and Disk scheduling, Storage management and applications on Unix.

UNIT I ASSEMBLERS COMPILERS LOADERS AND LINKERS 12 Hrs

Assemblers : Functions – Features – Machine dependent – Machine independent - Design options –One Pass – Multipass – Compilers: Function -Phases of a Compiler –Loader: Functions – Features – Relocation – Program Linking – Linking Loader Implementation Dynamic linking –Bootstrap loaders.

UNIT II OS CONCEPTS AND PROCESS MANAGEMENT

OS CONCEPTS Introduction- Operating System Structure- Operating System Operations-Operating System Services- System Calls-Process concept-Process Scheduling-Operation on Process-Cooperating Processes- Inter Process Communication-Threads-Overview-Multithreading Models.-CPU Scheduling-Scheduling Criteria-Scheduling Algorithms.

UNIT III SYNCHRONIZATION AND DEADLOCKS

Process Synchronization-The Critical Section Problem-Synchronization Hardware-Semaphores-Classical Problems of Synchronization-Deadlocks-System Model-Deadlock Characterization-Methods of Handling Deadlocks- Deadlock Prevention-Deadlock Avoidance-Deadlock Detection-Recovery from Deadlock

UNIT IV MEMORY MANAGEMENT I/O MANAGEMENT

Background-Swapping-Contiguous Memory Allocation - Address Translation - Paging - Segmentation - Segmentation with Paging - Paging Algorithms- Thrashing-Virtual Memory management- File Access methods- File system structure -Disk Scheduling

UNIT V APPLICATION

Case study on UNIX Operating System – Design principles – Process management –Scheduling –Memory Management - Inter process Communication.

TEXT BOOKS:

- 1. Beck L. (2008) System Software, An Introduction to System Programming (3rd ed.), Pearson
- 2. Silberschatz, Galvin, Gagne (2012) Operating System Concepts, (9th ed.), John Wiley & Sons (Asia) Pt. Ltd, Singapore,.

REFERENCE BOOKS:

- 1. Andrew S. Tanenbaum, Albert S, Wood Hull(2015) Modern Operating System, Pearson publication
- 2. D.M.Dhamdhere (2012) Operating SystemsConcepts, (3rd ed.), Tata McGraw-Hill Publishing Company Ltd.
- 3. William Stallings (2015) Operating Systems (8th ed.) Prentice Hall of India

12 Hrs

Total Hours: 60

12 Hrs

12 Hrs

12 Hrs



					2018	Regula	ation		-				
Subject Code BEC18I02	e: S	Subject Name : MICROPROCESSORS AND MICROCONTROLLERS						Ty/ Lb/ ETL	L	T. S.I		C C	
	Г		tot DEC	10101				Ty	3	0/0	0 0/0	3	
L : Lecture 7		Prerequisite: BES18I01 utorial S.Lr : Supervised Learning P : Project					Project		-			5	
Ty/Lb/ETL			-			•							
ToTo	study learn t desigr	the basic the assem a and und stand the	bly lang	guage pr the mult	ogramr iproces	ning of ssor con	8086. figurati	ons.			controllers		
COURSE C	UTC	OMES (COs):(3- 5)									
CO1		Ability t	o unders	tand the	archite	ecture o	f 8086 i	micropr	ocessoi	ſ			
CO2		Ability t	o unders	tand the	archite	ecture o	f 8051 i	microco	ntrolle	r			
CO3		Ability to understand the interfacing of different peripheral devices with the microprocessors											
CO4 Mapping of		Understa				<u> </u>			rocont	rollers			
COs/POs	PO1		PO3	PO4	PO5	PO6	PO7	PO8	PO	PO10	PO1	PO12	
05/105		102	105	104	105	100	107	100	9	1010			
CO1	H	M	L	L	L	M	L	L	М	L	L	Μ	
CO2	Н	Μ	L	L	L	М	L	L	Μ	L	L	Μ	
CO3	Н	Μ	L	L	Μ	L	L	L	L	L	L	Μ	
CO4	Н	Μ	L	L	Μ	L	L	L	L	L	L	М	
COs / PSOs	P	SO1	PS	02	PS	503	PS	504]	PSO5]	PSO6	
CO1	Н		L		L		Μ	M		L			
CO2	Н		L		L M		Μ	М		L			
CO3	Н		L		L M		М		L				
CO4	Н		Μ		Μ		L		L		L		
H/M/L indi	cates S	Strength	of Corr	elation	H- H	ligh, M	- Mediu	ım, L-L	JOW		·		
X	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
Category	Basic	Engi	Hun Scie	Prog	Pro§	Ope	Prac	Inte	Sofi				



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BEC18I02	MICROPROCESSORS AND MICROCONTROLLERS	Ту	3	0/0	0/0	3

OBJECTIVES:

- To study the basic architectures and operational features of the processors and controllers.
- To learn the assembly language programming of 8086.
- To design and understand the multiprocessor configurations.
- To understand the interfacing concepts of the peripheral devices with processors.

16 BIT MICROPROCESSOR UNIT I

Evolution of processors - 8086 Architecture - Functional Diagram - Register organization - Memory Addresses - Minimum mode - Maximum mode - Interrupts of 8086

UNIT II **INSTRUCTION SET AND ALP**

Instruction Formats - Addressing modes - Instruction set - Simple programs involving logical, branch and call instructions – sorting – string manipulations

UNIT III **INTERFACING**

Memory Interfacing - I/O Interfacing - Programmable Peripheral Interface 8255 - USART - DMA controller - Programmable Interval Timer 8253

UNIT IV MICROCONTROLLER

Introduction - 8051 Architecture - I/O Ports - Memory Organization - Addressing modes - Interrupts

UNIT V **APPLICATIONS**

Instruction set of 8051 - Applications - Simple programs - Interfacing with ADC- Interfacing with DAC-Stepper Motor – Traffic Light Controller

TEXT BOOKS:

- 1. Ray A.K. & Bhurchandi K.M. (2013) Advanced Microprocessors and Peripherals, Tata McGraw Hill Education pvt Ltd
- 2. Douglas v Hall. (2006) Microprocessors and Interfacing (2nd ed.), Tata McGraw Hill Publishing company Limited

REFERENCE BOOKS:

- 1. Badri Ram. (2006) Advanced Microprocessors and Interfacing, Tata McGraaw Hill Publishing *company limited*
- 2. Kenneth J. Avala (2008) "The 8051 Micro Controller", 3rd Edition, Thomas Delmar Learning.

9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs

Total Hours: 45



2018 Regulation

T/ S.Lr 0/0	P/R 0/0	C
	0/0	
0/0	0/0	
0/0	0/0	
0/0		NC
	0/0	ne
W		
y y		
-		
	ion	
es of s	tate p	olicy
PO10	PO11	PO1 2
L		
L		
L		
		1
		<u> </u>
		<u> </u>
		<u> </u>
		1
	e to stitut ution. s of s PO10 L L	e to stitution ution. s of state po PO10PO11 L L



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BHS18NC1	THEINDIAN CONSTITUTION	Ту	2	0/0	0/0	NC

OBJECTIVES:

- To provide an overview of the history of the making of Indian Constitution
- To understand the preamble and the basic structures of the Constitution.
- To Know the fundamental rights, duties and the directive principles of state policy
- To understand the functionality of the legislature ,the executive and the judiciary

UNIT I	3Hrs
The History of the Making of Indian Constitution, Preamble and the Basic Structures	
UNIT II	3Hrs
Fundamental Rights and Duties, Directive Principles of State Policy	
UNIT III	3Hrs
Legislature, Executive and Judiciary	
UNIT IV	3Hrs
Emergency Powers	
UNIT V	3Hrs
Special Provisions for Jammu and Kashmir, Nagaland and Other Regions, Amendments	

Total Hours: 15 Hrs

TEXT BOOKS:

1. D D Basu, Introductionto the Constitution of India, 20th Edn., Lexisnexis Butterworths, 2012.

REFERENCE BOOKS:

- 1. Rajeev Bhargava (ed), Ethics and Politics of the Indian Constitution, Oxford University Press, NewDelhi, 2008.
- 2. GranvilleAustin, TheIndianConstitution: CornerstoneofaNation, OxfordUniversityPress, Oxford, 1966.
- 3. Zoya Hassan, E. Sridharan and R. Sudarshan (eds), India's Living Constitution: Ideas, Practices, Controversies, Permanent Black, NewDelhi, 2002.
- 4. SubhashC.Kashyap,OurConstitution,NationalBookTrust, NewDelhi, 2011.



2018 Regulation

						18 Regu	lation						
Subject Code: BHS18NC2					N TI	RADITI EDGE	ONAL		Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
		Р	rerequ	isite: N	NIL				Ту	2	0/0	0/0	NC
L : Lecture T : 7							roject F	R : Res	search C	C: Credi	ts		
T/L/ETL : Theo	•	mbedd	ed The	eory ar	nd La	ıb							
To underTo Know Astronor	rstand the rstand the w the Histe my and As rstand the India	Tradit ory of strolog Origin	ional M Physic y n of Ma	Medici s and (athema	ne, T Chen atics,	Tradition nistry, T Aviatio	al Prod radition n Techr	uction nal Art nology	and Co and Ar	nstructi chitectu ient Ind	ion Techr and V lia, Crafts	nology astu Sha	
CO1	To under	stand t	he Pre	- color	nial a	nd Colo	nial Per	riod, I	ndian Ti	radition	al Knowl	ledge Sy	stem
CO2	To under	stand t	he Tra	ditiona	al Me	edicine,	Traditio	onal Pi	oductio	on and C	Constructi	ion Tech	nology
CO3 Mapping of Co	To under Trade in	Ancier	nt India	a					chnolog	gy in Ar	ncient Ind	lia, Craf	ts and
Mapping of Co	Juise Out	comes	with.	Tiogra		Jutcom	es (1 US)					
COs/POs													
UUS/EUS	PO1	PO2	PO3	PO)4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
COS/POS CO1	PO1	PO2 H	PO3 H	PO L)4	PO5	PO6 M	PO7	PO8	PO9	PO10 M	PO11	PO12
	PO1				04	PO5		PO7	PO8	PO9		PO11	
CO1	PO1	Н	Н	L)4	P05	М	PO7	PO8	PO9	М	PO11	L
CO1 CO2	PO1 PSO1	H H H	H H	L L L	04	PO5	M M M	PO7	PO8	PO9	M M	PO11	L L
CO1 CO2 CO2		H H H	H H	L L L			M M M	PO7	PO8	PO9	M M	PO11	L L
CO1 CO2 CO2 COs / PSOs CO1 CO2	PSO1	H H H	H H	L L L PS		PSO	M M M	PO7	PO8	PO9	M M	PO11	L L
CO1 CO2 CO2 CO5 / PSOs CO1 CO2 CO2 CO3	PSO1 L L L	H H H	H H H	L L PS L L L	02	PSO: M M M	M M 3			PO9	M M	PO11	L L
CO1 CO2 CO2 COs / PSOs CO1 CO2	PSO1 L L L	H H H	H H H	L L PS L L L	02	PSO: M M M	M M 3			PO9	M M	PO11	L L
CO1 CO2 CO2 CO5 / PSOs CO1 CO2 CO2 CO3	PSO1 L L L	H H H	H H H	L L PS L L L	02	PSO: M M M	M M 3				M M	PO11	L L



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/	L	T/ S.Lr	P/R	С
BHS18NC2	THE INDIAN TRADITIONAL KNOWLEDGE	ETLTy	2	0/0	0/0	NC

OBJECTIVES:

- To understand the Pre- colonial and Colonial Period, Indian Traditional Knowledge System
- To understand the Traditional Medicine, Traditional Production and Construction Technology
- To Know the History of Physics and Chemistry, Traditional Art and Architecture and Vastu Shashtra, Astronomy and Astrology
- To understand the Origin of Mathematics, Aviation Technology in Ancient India, Crafts and Trade in Ancient India

UNIT I

Historical Background: TKS During the Pre- colonial and Colonial Period, Indian Traditional

Knowledge System

UNIT II

Traditional Medicine, Traditional Production and Construction Technology

UNIT III

History of Physics and Chemistry, Traditional Art and Architecture and Vastu Shashtra, Astronomy and Astrology

UNIT IV

Origin of Mathematics, Aviation Technology in Ancient India, Crafts and Trade in Ancient India

UNIT V

TKS and the Contemporary World, TKS and the Indian Union, TKS and IT Revolution

Total Hours: 15 Hrs

3Hrs

3Hrs

3Hrs

3Hrs

3Hrs

TEXT BOOKS:

- 1. Amit Jha (2009), Traditional knowledge system in india, 1st Edition, Delhi University (North Campus)
- 2. Dr.A.K.Ghosh (2011), Traditional Knowledge of Household Products



Subject Code BCS18ET	::	bject Na	ame : V A PRO	GRAM	IMING		Ty/ Lb/ ETI	,	L	T/ S.Lr	P/R	С
	Pr	erequisi	te: BCS1	8002			ETL		1	0/1	3/0	3
L : Lecture T							roject I	R : Rese	arch C:	Credits		
Ty/Lb/ETL :		y/Lab/Ei	nbedded	Theory	and La	ıb						
OBJECTIV					_			_				
			uild, and									
		1 0		0 3		1 0		0	.	0	lasses,obj	ects,
			ariables,								4 11 11	
• Iow Mod		ograms i	ising gra	phical u	iser inte	erface (C	jOI) co	mponer	its and J	lava's Ev	ent Handl	ing
		MES ($\overline{\mathbf{O}}_{\mathbf{z}}$	P F)								
COURSE O			2 0s) : (2 n, create,		and dah	ug Jovo	annlia	tions	nd annla	ate		
01		lo desig	n, create,	ounu, a		ug Java	applice	uions al	iu apple	513.		
CO2											including nd polyme	orphism.
CO3			program Model.	s using	graphic	al user	interfac	e (GUI)) compo	nents and	d Java's E	vent
Mapping of				Progr	om Au	teomos	$(\mathbf{PO}_{\mathbf{S}})$					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO3/103	H	H	H	H	L	L	H	M	H	H	H	H
CO2	H	H	H	H	L	L	H	M	H	H	H	H
CO3	H	H	H	H	H	H	H	M	H	H	L	H
COs /												
PSOs	PSO	L	PSO2		PSO3		PSO4		PSO5		PSO6	
CO1	H		Η		L		Н		Μ		Н	
CO2	Н		Η		L		Н		Μ		Н	
CO3	Η		Η		L		Η		Μ		Н	
H/M/L indic	cates St	rength	of Corre	lation	H- Hi	gh, M-	Mediu	m, L-L	ow			
			-					kill				
		Ses	Social		Ś		t	nical Skill Is				
	ces	enc	So	ore	tives	ves	oject	ica				
	enc	Sci	nd	C		ctiv	Pro					
	Sci	ng	s al enc	m	E	Elle.	1/]	' Techr it Skill				
	ic	æri.	ities and Sciences	Program Co	am	l ne	tica					
	Basic Scien	Engineering Sciences	Humanities and Sciences	Prc	Program Elec	Open Electi	Practical / Pr	hip S				
ory	_	ing	Ium		Pr		P	rns				
Category			Н					Internships So				
Ca	1			~				-	1			
		1		•					1			



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18ET1	JAVA PROGRAMMING	ETL	1	0/1	3/0	3

OBJECTIVES :

- To design, create, build, and debug Java applications and applets.
- To write Java programs using object-oriented programming techniques including classes, objects, methods, instance variables, composition, inheritance, and polymorphism
- To write programs using graphical user interface (GUI) components and Java's Event Handling Model

UNIT I **OVERVIEW OF JAVA LANGUAGE**

Introduction to Java, Features of Java, Comparison with C and C++, Java and World Wide Web, Java Environment, Java Development kit (JDK), Java Runtime Environment(JRE), Application Programming Interface (API), Java Virtual Machine (JVM), Primitive Datatypes, Declarations, Ranges, Variable Names Conventions, Numeric Literals, Character Literals, String Literals, Arrays(One dimensional, twodimensional), Enumerated Data Types

UNIT II **CLASSES, OBJECTS AND METHODS**

Classes and Objects, Defining a class; Defining instance variables and methods, Creating objects out of a class,Method calls via object references,Abstraction,Packages,Interfaces and Abstract classes,Abstract and non-abstract methods, Inheritance, extends and implements keywords in Java, Super class and Sub class, this keyword, super keyword in Java for inheritance, Concrete classes in Java, Polymorphism, Compile time polymorphism - Overloading of methods, Run time polymorphism - Overriding of methods, Method Overriding rules and method overloading rules, Encapsulation.

UNIT III EXCEPTION AND MULTITHREADED PROGRAMMING

Exception handling, Need for exceptions, API heirarchy for Exceptions, Types of Exceptions, Keywords in Exception API: try, catch, finally, throw, throws, -Introduction to Threads – Creating Threads, Extending the Thread Class, Implementing the runnable interface, life cycle of a thread, priority of a thread, Multithreading ,Synchronization, Dead Lock.

UNIT IV STREAMS AND OBJECT SERIALIZATION

Overview of Streams, Bytes vs. Characters, Overview of the entire Java IO API, Reading a file; writing to a file usinf various APIs, Reading User input from console, PrintWriter Class, Object Serialization, Serializable Interface, Serialization API, ObjectInputStream and ObjectOutput, Transient Fields, readObject and writeObject.

UNIT V **GRAPHICS PROGRAMMING**

Introduction, Abstract Window Toolkit (AWT), Applets-Life Cycle- Basics of event handling - event handlers – adapter classes – actions – mouse events –AWT event hierarchy – introduction to Swing – buttons-Layout Management-Swing Components.

TEXT BOOKS:

1. Herbert Schildt, "The Complete Reference JAVA 2", Tata McGraw Hill publications, 7th Ed., 2007. 2. Balagurusamy, "Programming with JAVA A primer 3rd Edition", Tata McGraw-Hill, 2007

REFERENCE BOOKS:

1. Y.Daniel Liang, "An Introduction to JAVA Programming", Pearson, 2015 2. Kathy Sierra, Bert Bates, "Head First Java", Oreilly Publication, 2nd Edition, 2005

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs

Total Hours: 45



0.1: (0.1						8 Regu					75 7	D/D	
Subject Code		ubject N							Ty/ Lb/	L	T/ S.Lr	P/R	C
BCS18L03		DATAB	ASE MA	NAGE	MENI	SYST	EMS L	AB	ETL				
DCSIOLUJ	Р	rerequisi	te: BCS1	8L01					Lb	0	0/0	3/0	1
L : Lecture T Ty/Lb/ETL :							Project	R : Re	esearch C:	Credit	S		<u> </u>
OBJECTIV		5			, 								
				-		-		-	erate reporter and the second se		triggorg	assartio	n 0
COURSE O		Ũ		•••	constra	units, re	lerentia	u meş	giny cons	u antes,	uiggeis,	assertio	
COURSE 0 CO1					apply c	ommor	n SQL s	tatem	ents inclu	ding D	DL, DM	L and D	CL
		statemen	ts to perf	form dif	ferent	operatio	ons.			C			
CO2		Design d queries.	ifferent v	views of	f tables	for diff	erent us	sers ar	nd to appl	y embe	dded and	l nested	
CO3		Design a	-				~		n accordi	•		n design	1
		^							th data co	nsisten	cy.		
Mapping of									1		1		
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P 08	PO9	PO 10	PO11	PO	12
CO1	Н	М	Н	М	М	М	М	L	Н	Μ	Н		Μ
CO2	М	М	М	Н	М	H	М	Н	М	M	М		Η
CO3	Μ	L	Н	М	М	L	М	М	М	Н	L		Μ
COs / PSOs	P	SO1	PSO	02	PS	03	PSC	04	PSC)5		PSO6	
CO1		Μ	N	I	I	I	M	1	M	[Μ	
CO2		Μ	Н	[N	Л	M	1	L			Н	
CO3		Н	N	I	I	Ι	M	1	M	[Н	
H/M/L indi	cates S	Strength	of Corre	elation	H- H	igh, M·	- Mediu	ım, L	-Low				
								al					
		ces	Social					chnic					
r	s	cien			tives	S	ject	os / Tec					
Category	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical					
Cat	c Sci	neeri	aniti Ices	ram	ram	ı Ele	ical ,	erns	Skill				
	Basic	Engi	Humaniti Sciences	Prog	Prog	Dper	Pract	Int	Soft Skills				
							~						



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18L03	DATABASE MANAGEMENT SYSTEMS LAB	Lb	0	0/0	3/0	1

OBJECTIVES:

- To create a database and query it using SQL, design forms and generate reports.
- Understand the significance of integrity constraints, referential integrity constraints, triggers, assertions..

I. Program to learn DDL and DML commands

- 1. Execution of data description language commands
- 2. Execution of data manipulation language commands
- 3. Execution of data control language commands
- 4. Execution of transaction control language commands
- 5. Insert command
- 6. Select, from and where clause
- 7. Set operation [union, intersection, except]
- 8. String operations
- 9. Nested queries
- 10. Join operation
- 11. Modification of the database

II. PL / SQL programs

- 1. Control statements (for loop)
- 2. Control statements (while loop)
- 3. Control statements (for reverse loop)
- 4. Control statements (loop end loop)
- 5. Sum of even numbers
- 6. Sum of odd numbers
- 7. Series generation
- 8. Implementation of sub-program
- 9. Implementation of cursor using pl/sql
- 10. Control statement (if-else end if)



2018 Regulation

	T				201	8 Regu	lauon						
Subject		ect Name						Ty	/ L	ן ז	[/	P/R	C
Code:	S	YSTEN	I SOFT	WARE	& OP	ERATI	NG	Lb	/	S .	Lr		
BIT18L02			SYS	STEM I	LAB			ETI					
	Prere	quisite:	NII					Lb	0	0	/0	3/0	1
L : Lecture '				ervised	Learni	ησ Ρ·	Project	-	-			5/0	1
T/L/ETL : T			-			•	I Iojeci	K.KC		. crean	3		
1/L/L1L.1	neory/		Jeauca 1		inu Lat	,							
OBJECTIV	/FS •												
ODJECIIV		Univ Co	mmands										
•					10	1							
•	-	-	rocess ci		•				-				
•			ommuni		ncludin	ig share	a mem	ory, pip	es and n	nessages	6		
COURSE (DUTC	OMES (COs): (3- 5)									
CO1		I In danata	u din a ad	f Caucala	1401-10	A	hlan I		d Links				
COI		Understa	anding of	Symbo	of table.	, Assen	ibler, L	oader ai	ia Linke	er			
CO2		Demons	trate und	erstand	ing of P	now to s	starting	a new r	rocess	waiting	for a	Process	5.
202			ing algor					- ne F			101 U	- 100000	-,
C03			trate und		•		and siz	male					
005		Demons	u ale ulla	ei stand	ing of I		senu sig	,11a18					
C04	•	Demons	trate und	erstand	ing of I	now to s	synchro	nize pro	ocesses				
					Ū.		•	•					
C05		Demons	trate und	erstand	ing of I	nter-pr	ocess co	ommuni	cation a	nd page			
		Replace	ment algo	orithms		-							
Mapping of	f Cour	se Outco	omes wit	th Prog	ram O	utcome	es (POs)					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO	D11	PO12
CO1	Η	Μ	Μ	Μ	L	Μ	Μ	Η	Μ	L	L	_	L
CO2	M	M	M	H	L	L	L	M	M	M	M		M
C02	H	H	M	M	L	L	M	M	M	M	M		M
	_	_											
<u>C04</u>	M	M	M	H	H	L	L	L	L	M			L
C05	H	M	M	L	L	L	M	M	L	H	Μ		M
COs /	P	SO1	PS	02	PS	03	PS	604	PS	SO 5		PS)6
PSOs	-										_		
CO1	H		Н		Μ		L		H		Μ		
CO2	Μ		Μ		H		L		Μ		Μ		
C03	Η		Η		Μ		Μ		Μ		Μ		
C04	Μ		Μ		Η		Η		L		Μ		
C05	Н		Μ		Μ		L		Μ		Μ		
H/M/L indi		Strength		elation		ligh. M		um, L-					
						<u> </u>		, .					
								cal					
		s	Social					mic					
		nce	Soc		S			ech					
ıry		ciel			ive	~	ect	Internships / Technical Skill					
Category	ces	Š	an	ore	ecti	ve	roj	ps / T Skill					
late	ien	ing	ies	Cc	Eľ	scti	/ P	hil	ls				
C	Sci	eer	niti xes	m	m	Ele	cal	, m	kil				
	iic	žin(ma	815	gre	sn .	ctic	nte	t S				
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Π	Soft Skills				
						Ť		1	~ ~ 1	1			
	1			I		L	•		l	1			



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18L02	SYSTEM SOFTWARE AND OPERATING SYSTEM LAB	Lb	0	0/0	3/0	1

OBJECTIVES:

- Basic Unix Commands.
- Programs on process creation and Synchronization, and Scheduling.
- Inter process communication including shared memory, pipes and messages

SYSTEM SOFTWARE

- 1) Implementation of a Symbol Table
- 2) Implement Pass 1 of Two pass Assembler
- 3) Implement Pass 2 of Two pass Assembler
- 4) Implementation of Absolute Loader
- 5) Implementation of Relocation Loader

OPERATING SYSTEMS

- 1) Basic Unix commands
- 2) Shell Programming
- 3) System Calls using Fork, Exec
- 4) Inter Process Communication (IPC).
- 5) Implementation of Scheduling Algorithms
- 6) Dining Philosophers Problem
- 7) Bankers Algorithm
- 8) Implementation of File Allocation Strategies
- 9) Simulate Page Replacement Algorithms



						Regula					-		
Subject Code BEC18IL2	e: Su		ame : CROPR CROCON					Ty/ Lb/ ETI	,	L	T/ S.Lr	P/R	C
	Pr	erequisi	te: BEC	18IL1				Lb		0	0/0	3/0	1
L : Lecture T Ty/Lb/ETL :							rojec	t R : I	Researc	ch C:	Credits		
• 7	Го learı Го learı	n the ass	embly la embly la he interf	nguage	program	mming	of 80)51.	evices	with	processoi	°S	
COURSE O	UTCO	MES (C Os):((3- 5)									
CO1	A	Ability to	o underst	and the	Program	mming	of 80)86 mi	cropro	cessoi	ſ		
CO2	A	Ability to	o underst	and the	Program	mming	of 80)51 mi	crocon	trolle	r		
CO3	U	Jndersta	nd the ap	oplicatio	ons of n	nicropro	ocess	ors &	microc	ontro	llers		
Mapping of	Course	e Outco	mes witl	n Progr	am Ou	tcomes	(PO	s)					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	P 0 7	PO8	PO 9	PO	10	PO11	PO12
CO1	Н	Μ	L	L	Μ	L	L	L	L	L		L	Μ
CO2	Н	Μ	L	L	М	L	L	L	L	L		L	Μ
CO3	Η	Μ	L	L	М	L	L	L	L	L		L	Μ
COs / PSOs	PS	501	PS	02	PS	03	Р	SO4		PSC)5	P	506
CO1	Н		Μ		L		L		L			M	
CO2	H		Μ		L		L		L			Μ	
CO3	Н		Μ		L		L		Μ			M	
H/M/L indic	cates St	trength	of Corre	elation	H- Hi	igh, M-	Mee	dium, I	L-Low	,		1	
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
							~						



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BEC18IL2	MICROPROCESSORS AND MICROCONTROLLERS LAB	Lb	0	0/0	3/0	1

OBJECTIVES:

- To learn the assembly language programming of 8086.
- To learn the assembly language programming of 8051.
- To understand the interfacing concepts of the peripheral devices with processors

8086 Microprocessor:

- 1. Arithmetic operations
- 2. Block Movement of Data
- 3. Square and square root
- 4. Searching and sorting

8051 Microcontroller:

- 1. Arithmetic operations
- 2. Block Movement of Data
- 3. Square and square root
- 4. Searching and sorting

Interfacing:

- 1. Traffic light Controller
- 2. Stepper Motor Controller
- 3. Waveform Generation
- 4. Matrix Display



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18TS1	TECHNICAL SKILL I (EVALUATION)	Lb	0	0/0	3/0	1

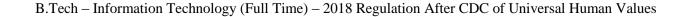
OBJECTIVES:

- To make the students expert in domain specific knowledge.
- To develop professionals with idealistic, practical and moral values.
- To facilitate the students with emerging technology.

From the list of skill development courses declared by the department, the students are expected to acquire the skill and get certified. This will be evaluated at the end of the semester by the faculty.



Subjec Code: BEN1		1	ıbject N			SKIL	LI			Ty/ Lb/ ETL	L	T/ S.Lr	P/F	
T T			erequis			1 T	•		· (D	ETL	0	0/0	3/0	1
			torial /Lab/Ei					P : Pro	ject R :	Researc	n C: Cre	dits		
OBJE	ECTI	VES :												
	•									helping t	hem imp	rove the	ir skill	set
	_		x, leadii	•	-	-				. 1		1 1 1.		
	•		and res		aware (oi vario	us tech	niques	of cand	idate reci	runnent	and ner	p them	prepare
	•				to face	e variou	is types	of inte	rview 1	oreparing	for HR	technic	al inter	rviews
	•		-						-	and pres				
			is mock	-									r	
		OUTC	OMES			5)								
Stude	nts wi	ll be a	ble to											
CO1								_		n skills a				
CO2						ecruitm	ent tec	hniques	like gr	oup disc	ussion, ii	nterview	vs and	be able to
~~~			/'s and											
CO3	_									HR and to		intervie	WS.	
CO4										nock sess	sions.			
			rse Out							DOA	DO		11	<b>DO10</b>
COs/I	PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO		011	PO12
s CO1		L	L	L	L	L	Μ	Μ	Н	Μ	H	M		H
CO2		L	L	L	L	L	Μ	Μ	Н	Μ	Н	M		H
CO3		L	L	L	L	L	Μ	Μ	Н	Μ	H	M		H
CO4		L	L	L	L	L	Μ	Μ	Н	М	Н	Μ		H
COs / PSOs		PS	01	PS	02	PS	03		1					
CO1		L		L		Н								
CO2		L		L		Н								
CO3		L		L		Н								
<b>CO4</b>		L		L		H								
H/M/	L ind	icates	Streng	th of C	orrelat	ion H	I- High	, M- N	ledium	, L-Low				
Category		Basic Sciences	Engineering Sciences	<ul> <li>✓ Humanities and Social Sciences</li> </ul>	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	<ul> <li>Soft Skills</li> </ul>				
				✓ ✓	[					√				



### EDUCAT TITUTE (An ISO 21001 : 2018 Certified Institution)

DEPARTMENT OF INFORMATION TECHNOLOGY

du. India

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BEN18SK1	SOFT SKILL I	ETL	0	0/0	3/0	1

#### **OBJECTIVES:**

- To create awareness in students, various top companies helping them improve their skill set matrix, leading to develop a positive frame of mind.
- To help students be aware of various techniques of candidate recruitment and help them prepare CV's and resume.
- To help student how to face various types of interview, preparing for HR, technical interviews.
- To help students improve their verbal reading, narration and presentation skills by performs various mock sessions.

#### **UNIT I**

Creation of awareness of top companies / improving skill set matrix / Development of positive frame of mind / Creation of self-awareness.

#### **UNIT II**

Group discussions / Do's and don'ts - handling group discussions / what evaluators look for interpersonal relationships / Preparation of Curriculum Vitae / Resume.

#### **UNIT III**

Interview – awareness of facing questions – Do's and don'ts of personal interview / group interview, enabling students to prepare for different proce3dures such as HR interviews and Technical Interviews / self-introductions.

#### **UNIT IV**

Verbal aptitude, Reading comprehension / narration / presentation / Mock Interviews.

#### **UNIT V**

Practical session on Group Discussion and written tests on vocabulary and reading comprehension

#### Practical component P : Include case studies / application scenarios

Research component R : Future trends / research areas / Comparative Analysis



6 Hrs

6 Hrs

6 Hrs

# 6 Hrs

#### 6 Hrs

**Total Hours: 30** 



#### DEPARTMENT OF INFORMATION TECHNOLOGY 2018 Regulation SEMESTER – V

e: Sı		ECT OR			TWAR	RE	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
Pr	erequisi	te: BCS1	8002				Ту	3	1/0	0/0	4
						Project	R : Rese	earch C:	Credits		
erstand erstand erstand rn vario	fundam the diff ous testi	ental con erent app ng and m	ncepts c proach f naintena	of requir for Obje	rements ect Orie			d Analy	sis Mode	lling.	
			-	s in mar	naging	a softw	are Deve	lonment			
		-				u 3011W		lopmen			
	•		•			and Ana	lysis M	odeling.			
	-	-		-	-		-	-	nt.		
			_			-					
Cours	e Outco	mes wit	h Progi	ram Ou	tcomes	s (POs)					
PO1	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	PO8	PO9	PO10	PO11	PO12
Н	Н	М	Н	Μ	L	L	Н	Н	Н	Μ	Н
Η	Н	Н	Н	Н	Μ	М	Н	Н	Μ	L	Μ
H	Н	Н	Μ	Μ	Μ	Μ	Μ	Н	Μ	L	Μ
Н	Н	Η	Н	Η	Μ	Μ	Н	Η	Н	Μ	Н
Η	Н	Η	Η	Η	Μ	Μ	Н	Н	Н	Μ	Н
PS	501	PSO	02	PS	03	PS	04	PS	05	PS	606
	H	H	[	ŀ	I	]	H	]	Η	-	H
				Ν	Л			N	Л		H
											H
											H
									Л		H
cates S	trength	of Corre	elation	H-H	igh, M	- Mediu	ım, L-L	ow			
Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			
	Pr F: Tuto Theory ES: erstand erstand erstand m vario UTCO I Cours PO1 H H H H H H S Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cours Cou	OBJH         Prerequisi         Theory/Lab/E         ES :         erstand the pha         erstand the diff         rn various testi         OUTCOMES (0         Identify i         Compare         Compare         Compare         OUTSCOMES (0         Identify is         Compare         Compare         Compare         OUT         PO1         PO2         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H         H	OBJECT OR ENCIONOBJECT OR ENCIONPrerequisite: BCS1Theory/Lab/EmbeddedES :erstand the phases in a serstand fundamental concerstand fundamental concerstand the different apprint various testing and mOUTCOMES (COS) : (Identify the key aCompare differentConcepts of requiteConcepts of requiteConcepts of requiteConcepts of requiteCompare and comCourse Outcomes withPO1PO2PO3HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH <td< td=""><td>OBJECT ORIENTE         ENGINEE         Prerequisite: BCS18002         Titorial S.Lr : Supervised         Theory/Lab/Embedded Theory         ES :         erstand the phases in a software         erstand the different approach f         roteory/Lab/Embedded Theory         ES :         erstand the different approach f         roteory (COS) : (3-5)         Identify the key activities         Compare different proces         Concepts of requirement         Apply systematic proced       Compare and contrast the         Compare and contrast the         PO1       PO2       PO3       PO4         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H</td><td>OBJECT ORIENTED SOF ENGINEERING         Prerequisite: BCS18002         F: Tutorial S.Lr : Supervised Learning Theory/Lab/Embedded Theory and Later Step Series and the phases in a software developer stand fundamental concepts of requirerestand the different approach for Objern various testing and maintenance me         UTCOMES (COS) : (3-5)         Identify the key activities in mare Compare different process mode Concepts of requirements engined Apply systematic procedure for Compare and contrast the variout Course Outcomes with Program Out PO1         PO1       PO2       PO3       PO4       PO5         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H<!--</td--><td>OBJECT ORIENTED SOFTWARE         Perequisite: BCS18002         T: Tutorial       S.Lr : Supervised Learning       P : F         Theory/Lab/Embedded       Theory and Lab       Theory/Lab/Embedded       Theory and Lab         ES :         erstand the phases in a software development         erstand the different approach for Object Orie         rn various testing and maintenance measures         UTCOMES (COs) : (3-5)         Identify the key activities in managing at Compare different process models.         Concepts of requirements engineering at Apply systematic procedure for software Compare and contrast the various testing         Outcomes with Program Outcomes         PO1       PO2       PO3       PO4       PO5       PO6         H       H       H       M       M       M         H       H       H       M       M       M         H       H       H       H       M       M         H       H       H       H       H       M       M         H       H       H       H       M       M       M       M         H       H       H       H       M       M</td><td>OBJECT ORIENTED SOFTWARE ENGINEERING         Prerequisite: BCS18002       Prerequisite: BCS18002         1: Tutorial       S.Lr : Supervised Learning P : Project         Theory/Lab/Embedded Theory and Lab         EF :         erstand the phases in a software development         erstand the different approach for Object Oriented Derem various testing and maintenance measures         UTCOMES (COs) : (3-5)         Identify the key activities in managing a software         Compare different process models.         Concepts of requirements engineering and Ana         Apply systematic procedure for software desig         Compare and contrast the various testing and n         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       H       H       M       M       M         H       H       H       M       M       M         H       H       H       H       M       M         H       H       H       H       M       M         H       H       H       M       M       M         H       H       H       M       M</td><td>OBJECT ORIENTED SOFTWARE ENGINEERING       Lb/ ETL         Prerequisite: BCS18002       Ty         C: Tutorial       S.Lr : Supervised Learning P : Project R : Rese Theory/Lab/Embedded Theory and Lab         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering an erstand the different approach for Object Oriented Design rn various testing and maintenance measures         OUTCOMES (COs) : (3-5)       Identify the key activities in managing a software Deve Compare different process models.         Concepts of requirements engineering and Analysis Md Apply systematic procedure for software design and de Compare and contrast the various testing and maintena         Course Outcomes with Program Outcomes (POS)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8         H       H       M       M       M       M         PSO1       PSO2       PSO3       PSO4         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H       H</br></td><td>OBJECT ORIENTED SOFTWARE ENGINEERING       Lb/ ETL         Prerequisite: BCS18002       Ty       3         T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Theory/Lab/Embedded Theory and Lab       Ty       3         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering and Analyse erstand the different approach for Object Oriented Design rn various testing and maintenance measures       Ty       3         UTCOMES (COS) : (3-5)       Identify the key activities in managing a software Development Compare different process models.       Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deploymer Compare and contrast the various testing and maintenance       PO2         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9         H       H       H       M       M       H       H         H       H       H       M       M       H         H       H       H       H       H       H         H       H       H       H       H       M         H       H       H       H       H       M         H       H       H       H       H       H         H</td><td>OBJECT ORIENTED SOFTWARE ENGINEERING       LĎ/ ETL       S.Lr         Prerequisite: BCS18002       Ty       3       1/0         C: Tutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits Theory/Lab/Embedded Theory and Lab       Ty       3       1/0         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering and Analysis Mode erstand the different approach for Object Oriented Design rn various testing and maintenance measures       Supervised Learning P : Project R : Research C: Credits         UTCOMES (COS) : (3 - 5)       Identify the key activities in managing a software Development. Compare different process models.       Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deployment. Compare and contrast the various testing and maintenance       Course Course Outomes with Program Outcomes (POS)         POI       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10         H       H       H       M       M       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H</td></td></td<> <td>OBJECT ORIENTED SOFTWARE ENGINEERING       $Lb/$ ETL       S.Lr         Prerequisite: BCS18002       Ty       3       1/0       0/0         Trutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits         Theory/Lab/Embedded Theory and Lab       ES :         erstand the phases in a software development         erstand fundamental concepts of requirements engineering and Analysis Modelling.         erstand the different approach for Object Oriented Design         rn various testing and maintenance measures         VUTCOMES (COs) : (3-5)         Identify the key activities in managing a software Development.         Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deployment.         Compare and contrast the various testing and maintenance         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11         H       H       H       M       M       H       M       L       H       H       M         Longare and contrast the various testing and maintenance       FO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11</td>	OBJECT ORIENTE         ENGINEE         Prerequisite: BCS18002         Titorial S.Lr : Supervised         Theory/Lab/Embedded Theory         ES :         erstand the phases in a software         erstand the different approach f         roteory/Lab/Embedded Theory         ES :         erstand the different approach f         roteory (COS) : (3-5)         Identify the key activities         Compare different proces         Concepts of requirement         Apply systematic proced       Compare and contrast the         Compare and contrast the         PO1       PO2       PO3       PO4         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H       H       H       H         H	OBJECT ORIENTED SOF ENGINEERING         Prerequisite: BCS18002         F: Tutorial S.Lr : Supervised Learning Theory/Lab/Embedded Theory and Later Step Series and the phases in a software developer stand fundamental concepts of requirerestand the different approach for Objern various testing and maintenance me         UTCOMES (COS) : (3-5)         Identify the key activities in mare Compare different process mode Concepts of requirements engined Apply systematic procedure for Compare and contrast the variout Course Outcomes with Program Out PO1         PO1       PO2       PO3       PO4       PO5         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H </td <td>OBJECT ORIENTED SOFTWARE         Perequisite: BCS18002         T: Tutorial       S.Lr : Supervised Learning       P : F         Theory/Lab/Embedded       Theory and Lab       Theory/Lab/Embedded       Theory and Lab         ES :         erstand the phases in a software development         erstand the different approach for Object Orie         rn various testing and maintenance measures         UTCOMES (COs) : (3-5)         Identify the key activities in managing at Compare different process models.         Concepts of requirements engineering at Apply systematic procedure for software Compare and contrast the various testing         Outcomes with Program Outcomes         PO1       PO2       PO3       PO4       PO5       PO6         H       H       H       M       M       M         H       H       H       M       M       M         H       H       H       H       M       M         H       H       H       H       H       M       M         H       H       H       H       M       M       M       M         H       H       H       H       M       M</td> <td>OBJECT ORIENTED SOFTWARE ENGINEERING         Prerequisite: BCS18002       Prerequisite: BCS18002         1: Tutorial       S.Lr : Supervised Learning P : Project         Theory/Lab/Embedded Theory and Lab         EF :         erstand the phases in a software development         erstand the different approach for Object Oriented Derem various testing and maintenance measures         UTCOMES (COs) : (3-5)         Identify the key activities in managing a software         Compare different process models.         Concepts of requirements engineering and Ana         Apply systematic procedure for software desig         Compare and contrast the various testing and n         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       H       H       M       M       M         H       H       H       M       M       M         H       H       H       H       M       M         H       H       H       H       M       M         H       H       H       M       M       M         H       H       H       M       M</td> <td>OBJECT ORIENTED SOFTWARE ENGINEERING       Lb/ ETL         Prerequisite: BCS18002       Ty         C: Tutorial       S.Lr : Supervised Learning P : Project R : Rese Theory/Lab/Embedded Theory and Lab         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering an erstand the different approach for Object Oriented Design rn various testing and maintenance measures         OUTCOMES (COs) : (3-5)       Identify the key activities in managing a software Deve Compare different process models.         Concepts of requirements engineering and Analysis Md Apply systematic procedure for software design and de Compare and contrast the various testing and maintena         Course Outcomes with Program Outcomes (POS)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8         H       H       M       M       M       M         PSO1       PSO2       PSO3       PSO4         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H         H       H       H       H       H       H</br></td> <td>OBJECT ORIENTED SOFTWARE ENGINEERING       Lb/ ETL         Prerequisite: BCS18002       Ty       3         T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Theory/Lab/Embedded Theory and Lab       Ty       3         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering and Analyse erstand the different approach for Object Oriented Design rn various testing and maintenance measures       Ty       3         UTCOMES (COS) : (3-5)       Identify the key activities in managing a software Development Compare different process models.       Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deploymer Compare and contrast the various testing and maintenance       PO2         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9         H       H       H       M       M       H       H         H       H       H       M       M       H         H       H       H       H       H       H         H       H       H       H       H       M         H       H       H       H       H       M         H       H       H       H       H       H         H</td> <td>OBJECT ORIENTED SOFTWARE ENGINEERING       LĎ/ ETL       S.Lr         Prerequisite: BCS18002       Ty       3       1/0         C: Tutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits Theory/Lab/Embedded Theory and Lab       Ty       3       1/0         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering and Analysis Mode erstand the different approach for Object Oriented Design rn various testing and maintenance measures       Supervised Learning P : Project R : Research C: Credits         UTCOMES (COS) : (3 - 5)       Identify the key activities in managing a software Development. Compare different process models.       Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deployment. Compare and contrast the various testing and maintenance       Course Course Outomes with Program Outcomes (POS)         POI       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10         H       H       H       M       M       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H</td>	OBJECT ORIENTED SOFTWARE         Perequisite: BCS18002         T: Tutorial       S.Lr : Supervised Learning       P : F         Theory/Lab/Embedded       Theory and Lab       Theory/Lab/Embedded       Theory and Lab         ES :         erstand the phases in a software development         erstand the different approach for Object Orie         rn various testing and maintenance measures         UTCOMES (COs) : (3-5)         Identify the key activities in managing at Compare different process models.         Concepts of requirements engineering at Apply systematic procedure for software Compare and contrast the various testing         Outcomes with Program Outcomes         PO1       PO2       PO3       PO4       PO5       PO6         H       H       H       M       M       M         H       H       H       M       M       M         H       H       H       H       M       M         H       H       H       H       H       M       M         H       H       H       H       M       M       M       M         H       H       H       H       M       M	OBJECT ORIENTED SOFTWARE ENGINEERING         Prerequisite: BCS18002       Prerequisite: BCS18002         1: Tutorial       S.Lr : Supervised Learning P : Project         Theory/Lab/Embedded Theory and Lab         EF :         erstand the phases in a software development         erstand the different approach for Object Oriented Derem various testing and maintenance measures         UTCOMES (COs) : (3-5)         Identify the key activities in managing a software         Compare different process models.         Concepts of requirements engineering and Ana         Apply systematic procedure for software desig         Compare and contrast the various testing and n         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       H       H       M       M       M         H       H       H       M       M       M         H       H       H       H       M       M         H       H       H       H       M       M         H       H       H       M       M       M         H       H       H       M       M	OBJECT ORIENTED SOFTWARE ENGINEERING       Lb/ 	OBJECT ORIENTED SOFTWARE ENGINEERING       Lb/ ETL         Prerequisite: BCS18002       Ty       3         T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Theory/Lab/Embedded Theory and Lab       Ty       3         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering and Analyse erstand the different approach for Object Oriented Design rn various testing and maintenance measures       Ty       3         UTCOMES (COS) : (3-5)       Identify the key activities in managing a software Development Compare different process models.       Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deploymer Compare and contrast the various testing and maintenance       PO2         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9         H       H       H       M       M       H       H         H       H       H       M       M       H         H       H       H       H       H       H         H       H       H       H       H       M         H       H       H       H       H       M         H       H       H       H       H       H         H	OBJECT ORIENTED SOFTWARE ENGINEERING       LĎ/ ETL       S.Lr         Prerequisite: BCS18002       Ty       3       1/0         C: Tutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits Theory/Lab/Embedded Theory and Lab       Ty       3       1/0         ES :       erstand the phases in a software development erstand fundamental concepts of requirements engineering and Analysis Mode erstand the different approach for Object Oriented Design rn various testing and maintenance measures       Supervised Learning P : Project R : Research C: Credits         UTCOMES (COS) : (3 - 5)       Identify the key activities in managing a software Development. Compare different process models.       Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deployment. Compare and contrast the various testing and maintenance       Course Course Outomes with Program Outcomes (POS)         POI       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10         H       H       H       M       M       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H	OBJECT ORIENTED SOFTWARE ENGINEERING $Lb/$ ETL       S.Lr         Prerequisite: BCS18002       Ty       3       1/0       0/0         Trutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits         Theory/Lab/Embedded Theory and Lab       ES :         erstand the phases in a software development         erstand fundamental concepts of requirements engineering and Analysis Modelling.         erstand the different approach for Object Oriented Design         rn various testing and maintenance measures         VUTCOMES (COs) : (3-5)         Identify the key activities in managing a software Development.         Concepts of requirements engineering and Analysis Modeling.         Apply systematic procedure for software design and deployment.         Compare and contrast the various testing and maintenance         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11         H       H       H       M       M       H       M       L       H       H       M         Longare and contrast the various testing and maintenance       FO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
BCS18009	<b>OBJECT ORIENTED SOFTWARE ENGINEERING</b>	Ту	3	1/0	0/0	4

#### **OBJECTIVES:**

- Understand the phases in a software development
- Understand fundamental concepts of requirements engineering and Analysis Modelling.
- Understand the different approach for Object Oriented Design
- Learn various testing and maintenance measures

#### UNIT I SOFTWARE DEVELOPMENT LIFE CYCLE

Introduction -Software process models: The waterfall model, Incremental development, Reuse-oriented software engineering – OOSD Life cycle: Process activities Software specification – Software design and implementation – Software validation – Software evolution- Process iteration: Prototyping, Incremental delivery, Boehm's spiral model - Agile methodology - OMT – Booch Methodology – Jacobson methodology – patterns – unified approach

UNIT II OBJECT ORIENTED SOFTWARE REQUIREMENTS AND ANALYSIS 12 Hrs Requirements engineering: Functional and non-functional requirements – The software requirements document – System Modeling: Context models – Interaction models - Structural models - Behavioral models - UML: Static and Dynamic Models–Introduction to UML -Use case Diagram – Class diagrams – Dynamic modeling-Packages and Model Organization-UML Extensibility - Use case model – Creation of Classes: Noun Phrase Approach – Identifying Object Relationships, Attributes and Methods

#### UNIT III OBJECT ORIENTED SOFTWARE DESIGN

Architectural design: Architectural design decisions - Architectural views - Architectural patterns - Application architectures - Design and implementation: Object-oriented design using the UML - OO Design Axioms – Corollaries-Design Patterns- Designing Classes: Class Visibility – refining Attributes – Designing Methods – Access layer: Object Store and Persistence- OODBMS – Table Class mapping – Designing Access layer classes - View layer: Designing Interface Objects

#### UNIT IV TESTING

Software testing: Development testing - Test-driven development - Release testing - User testing - Quality Assurance Test – Testing strategies – Impact of OO Testing – Test Cases – Test Plan – Continuous Testing - Myers's Debugging principles.

### UNIT V SOFTWARE QUALITY & MANAGEMENT 12 Hrs

Project management: Risk management- Managing people – Teamwork - Project planning: Software pricing - Plan-driven development - Project scheduling - Agile planning - Estimation techniques Quality management: Software quality - Software standards - Reviews and inspections - Software measurement and metrics - Configuration management: Change management - Version management - System building - Release management

#### **TEXT BOOK:**

1. Yogesh Singh, Ruchika Malhotra (2012), *Object – Oriented Software Engineering* PHI Learning Private Limited.

#### **REFERENCE BOOKS:**

- 1. Ian Sommerville (2008) Software Engineering (9thed.) Pearson Education Asia
- 2. Ali Bahrami (2008) Object Oriented System Development McGraw Hill international
- 3. Roger S. Pressman (2010) Software Engineering: A Practitioner Approach (8thed.) McGraw hill Publications
- 4. Grady Booch (2009) Object oriented Analysis & design , Pearson Education India

### **Total Hours: 60**

12 Hrs

15 Hrs

9 Hrs



					2018	Regula	ation					-
Subject Code BCS18007	: Si	ubject Na COI	ame : MPUTE	R NET	WORK	S	Ty Lb ET	)/	L	T/ S.Lr	P/R	C
	P	rerequisi	te: NIL				Ту	7	3	1/0	0/0	3
L : Lecture T Ty/Lb/ETL :	: Tuto	orial S.	Lr : Supe			•	Project	R : Rese	earch C:	Credits		
<ul><li>To ur</li><li>To le</li></ul>	tuden idersta arn ab	and how out the p	e have kn commun protocols various i	ication for dat	takes p a comm	lace in unicati	various on in th	mediun e netwo	rk layer			
COURSE O	UTCO	OMES (	COs):((	3- 5)								
CO1	]	Have kno	owledge	on func	tions of	f Netwo	ork Dev	vices &	OSI Lay	ers for C	ommunic	ation
CO2			lge on IP			•						
CO3			-					-	tion on 1	network u	ising algo	orithms
Mapping of										-	-	
COs/POs	PO1		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Η	Μ	Μ	L	Н	Μ	L	L	H	Μ	Н	Н
CO2	Η	H	Н	Μ	Н	Η	Μ	L	H	Μ	Н	Н
CO3	Н	H	Н	H	H	Μ	Μ	L	H	M	H	Н
COs / PSOs	P	SO1	PSO	02	PS	03	PS	04	P	805	P	506
CO1		Н	Н	[	I	L	]	H		H		М
CO2		H	Н	[	I	Ĺ	]	H		H		М
CO3		H	Н	[	I	Ĺ	J	H		H		М
H/M/L indic	ates S	trength	of Corre	elation	H-H	igh, M-	Mediu	ım, L-L	ow			
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			
		~										



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18007	COMPUTER NETWORKS	Ту	3	1/0	0/0	3

#### **OBJECTIVES:**

The students will be able to:

- The students will be have knowledge of the networks functions
- To understand how communication takes place in various mediums
- To learn about the protocols for data communication in the network layers
- To study about the various network algorithms for smooth data communication

#### UNIT I INTRODUCTION

Introduction to computer networks and uses - Network: devices, topology, types - Reference model - The physical layer - The theoretical basis for data communication - Transmission media: Guided and unguided-Public Switched Telephone Network.

#### UNIT II DATA LINK LAYER

Data link layer design issues - Error detection and correction - Sliding window protocols- HDLC –Channel access on links: SDMA – TDMA - FDMA – CDMA - ETHERNET - 802.11, 802.16 - Bridges and Switches-Bluetooth

#### UNIT III NETWORK LAYER

Network layer design issues - Circuit switching – Packet switching – Virtual circuit switching-Routing algorithms – Congestion control algorithms - Internetworking- Network layer in Internet -IPV6

#### UNIT IV TRANSPORT LAYER

Transport layer design issues - Transport protocols - Simple transport protocol - Internet transport protocols UDP, TCP - Flow Control - Congestion control - Congestion avoidance

#### UNIT V APPLICATION LAYER

Domain name system - Electronic mail – Introduction to World Wide Web: HTTP, SNMP, Telnet, FTP, RTP.

#### **TEXT BOOKS:**

- 1. Peterson Davie (2012) Computer Networks A System Approach (2nd ed.), Morgan Kauffman Harcourt Publishers.
- 2. James F. Kurose, Keith W. Ross Computer Networking: A Top-Down Approach / Edition 6, Pearson publication, 2012.

#### **REFERENCE BOOKS:**

- 1. Andrew S. Tanenbaum. David J. Wetherall, "Computer Networks "5th Edition PHI, 2011
- 2. William Stallings," Data and computer communications", PHI, 2001
- 3. Douglas E. comer," Internetworking with TCP/IP-Volume-I", PHI, 5th edition 2006
- 4. Godbole, "Data communication and networking", TMH, 2004.
- 5. Forouzan B. A., "Data Communications and networking", TMH, 2003.

# 9 Hrs

9 Hrs

9 Hrs

9 Hrs

#### 9 Hrs

**Total Hours: 45** 



					2018	Regula	ation					
Subject Cod BCS18ET2	le Su	bject Na	ame : COMPU	TER G				Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
	Pr	erequisi	te: BES1	8ET2				ETL	1	0/1	3/0	3
L : Lecture	Γ: Tuto	orial S	.Lr : Sup	ervised		•	roject l	R : Rese	arch C: 0	Credits		
Ty/Lb/ETL	: Theor	y/Lab/E	mbedded	1 Theory	y and La	ab						
•	Unders Unders Unders	tand the tand illu	e output p three din iminatior animatic	mensior n and co	al grap	hics and	-	-		ransform	ations.	
COURSE (	OUTCO	OMES (	<b>COs</b> ):(	3- 5)								
CO1	Г	Transfor	m geome	trical st	ructures	s, perfo	rm clipp	oing on g	geometri	cal object	ts	
CO2	A	Analyze	a 3D stru	icture								
CO3		Create a	and evalu	ate grap	phic pro	jects						
Mapping of	f Cours	e Outco	omes wit	h Progi	am Ou	itcomes	(POs)					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO10	PO11	PO12
CO1	Н	Μ	Н	М	Μ	М	L	Μ	Μ	L	L	L
CO2	Н	Μ	Н	L	Η	Μ	L	Μ	Μ	L	L	L
CO3	Н	Μ	Н	М	Η	М	L	М	Μ	L	L	L
COs / PSOs	PS	01	PS	02	PS	03	PS	04	PS	05	PS	506
CO1	Н		Н		L		L		L		L	
CO2	Н		Н		L		L		L		L	
CO3	Н		Н		L		Μ		L		Μ	
H/M/L indi	cates S	trength	of Corr	elation	H-H	igh, M-	Mediu	m, L-L	ow		<u> </u>	
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			
	Basic	Engi	Hum	Prog	Prog	Ope	Prac		Soft			



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18ET2	COMPUTER GRAPHICS	ETL	1	0/1	3/0	3

#### **OBJECTIVES:**

- Understand the output primitives, two dimensional graphics and their transformations.
- Understand the three dimensional graphics and their transformations.
- Understand illumination and color models
- Learn to create animations

#### UNIT I **OUTPUT PRIMITIVES**

Output primitives-Line drawing algorithms-Loading the frame buffer-Line function-Circle generation algorithms - Ellipse generation algorithms - Attributes of output primitives-Numerical problem solving and programs on line, circle and ellipse drawing algorithms

#### **UNIT II TWO DIMENSIONAL TRANSFORMATION & VIEWING**

Two dimensional transformations- Matrix representations and homogeneous coordinates - Composite transformations - two dimensional viewing -Window to view port transformation - Clipping operations -Point clipping - Line clipping (Cohen - Sutherland line Clipping) - Polygon clipping(Sutherland -Hodgeman algorithm) –Numerical problem solving and programming on two dimensional transformation ,viewing and clipping

#### UNIT III THREE DIMENSIONAL GRAPHICS

Three dimensional concepts - Three dimensional object representation -Three Dimensional Transformations - Visible surface detection methods (Back Face Detection - Depth Buffer Method - Scan Line Method) - Numerical problem solving and programming on three dimensional transformations

#### POLYGONRENDERING METHODS AND COLOUR MODELS **UNIT IV**

Constant-Intensity Shading - Gouraud Shading- Phong Shading- chromaticity diagram - RGB colour model - YIQ colour model - CMY colour model - Colour selection

#### UNIT V ANIMATION GRAPHICS

Design of Animation sequences – animation function – raster animation – key frame systems – motion specification -morphing - create Interactive animation for gamming

#### **TEXT BOOKS:**

- 1. Donald, D. Hearn. Pauline, Baker, M. Warren, Carithers. (2010) Computer graphics with Open GL, (4thed.)
- 2. Computer Graphics (Special Indian Edition) (Schaum's Outline Series) 2nd Edition, 2006 (English, Paperback, Xiang, Plastock, Avadhani), McGraw Hill Education (India) Private Limited

#### **REFERENCE BOOKS:**

1. John F. Hughes, Andries Van Dam, Morgan Mc Guire , David F. Sklar , James D. Foley, Steven K. Feiner and Kurt Akeley, "Computer Graphics: Principles and Practice", 3rd Edition, Addison-Wesley Professional, 2013.

2. Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, Erik Reinhard, Kelvin Sung, and AK Peters, Fundamental of Computer Graphics, CRC Press, 2010.

	Subject Code:	Subject Name :	Ty/	L	T/	P/R	С
--	---------------	----------------	-----	---	----	-----	---

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

### 9 Hrs

9 Hrs

9 Hrs

# 9 Hrs

9 Hrs

#### **Total Hours: 45**



(An ISO 21001 : 2018 Certified Institution) Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

### DEPARTMENT OF INFORMATION TECHNOLOGY

2018 Regulation

						Regula			1					
BCS18L0	8	OBJ	ECT OF ENGI		ED SOI ING LA		RE	Lb/ ETL		S.Lr	•			
		ereauisi	te: BCS1					Lb	0	0/0	3/0	1		
L : Lecture					Learnir	ησ Ρ·Ε	Project R				5/0	1		
Ty/Lb/ETI							Toject I	x . Resea	ich C. v	cicuits				
OBJECT		y/ La0/ L	mocuucu			<u>a</u> 0								
	entify Us	e Cases	and deve	lop the	Use Ca	ase mod	el.							
	entify the							ity diagra	am.					
	entity the									ass diagr	am.			
	ing the ic											UML		
	eraction							5	1		U			
• Dr	aw the St	tate Cha	rt diagra	m.										
• Ide	entify the	User In	terface, l	Domain	objects	s, and T	echnical	services	. Draw	the parti	al layere	d,		
	gical arch									-	-			
• Im	plement	ment the Technical services layer. * Implement the Domain objects layer. JTCOMES (COs) : ( 3- 5)												
	how the	<b>.</b>					0	0	<u> </u>	A				
	Show how the object-oriented approach differs from the traditional approach to systems analysis													
	and design.													
	Construct various UML models (including use case diagrams, class diagrams, interaction diagrams, state chart diagrams, activity diagrams, and implementation diagrams) using the													
	diagrams, state chart diagrams, activity diagrams, and implementation diagrams) using the appropriate notation.													
				aturaan		abiaat	malation	hing, ink	oniton		ation wi			
	lecognize					sobject	relations	snips: inr	ieritanc	ce, associ	ation, wi	iole-		
	art, and d how the					modal	in davale	ning ohi	oct ori	antad cof	tworo			
Mapping								ping obj	ect-011	enteu sor	twale.			
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO10	PO11	PO12		
CO1	H	H	H	H	H	L	L	H	H	H	M	H		
CO2	Н	Н	Н	Н	Н	L	L	Н	Н	Μ	L	Н		
CO3	Н	Н	Н	Н	Н	L	L	Н	Н	Μ	L	Н		
CO4	Н	Н	Н	Н	Н	L	L	Н	Н	Н	Μ	Н		
CO5	Н	Η	Η	Н	Н	L	L	Н	Н	Н	Μ	Н		
COs /	PS	501	PSC	02	PS	03	PSO4		PSO5	5	PS	<b>606</b>		
PSOs														
CO1		H	H			H	Η		Н			H		
CO2		H	H			H	Н	_	Μ			H		
CO3		H	H			H	Н		Μ			H		
CO4		H	H			H	H		Μ			H		
CO5		H	H			M	H	<u> </u>	Μ			H		
H/M/L in	licates Si	trength	of Corre	elation		igh, M·	Mediu	m, L-Lo	W	[]				
			S		ves		sct	/ III						
	Ses		Humanities and Social Sciences	re	Program Electives	ves	roje	Internships / Technical Skill						
Category	Basic Sciences	Engineering Sciences	ies cieı	Program Core	Ele	Open Electives	$/P_1$	nshi cal	S					
teg	Sci	eer. >es	niti S(	um	um	Ele	cal	terr hni	Soft Skills					
Ca	sic	gin enc	Human Social	gr;	gr;	en	acti	Int Tecj	ft S					
	Ba	Engineeri Sciences	Hu So(	Prc	Prc	Op	<ul> <li>Practical / Project</li> </ul>		Soi					
							<ul> <li></li> </ul>							



#### 2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18L08	OBJECT ORIENTED SOFTWARE ENGINEERING LAB	Lb	0	0/0	3/0	1

#### **OBJECTIVES:**

- Identify Use Cases and develop the Use Case model.
- Identify the business activities and develop an UML Activity diagram.
- Identity the conceptual classes and develop a domain model with UML Class diagram.
- Using the identified scenarios find the interaction between objects and represent them using UML Interaction diagrams.
- Draw the State Chart diagram.
- Identify the User Interface, Domain objects, and Technical services. Draw the partial layered, logical architecture diagram with UML package diagram notation.
- Implement the Technical services layer. * Implement the Domain objects layer.

#### EXERCISES

- 1. Study of case tools such as rational rose or equivalent tools
- 2. Railway reservation system
- 3. Student Mark Analysis system
- 4. Payroll processing application
- 5. Inventory system
- 6. Automating the Banking process
- 7. Course Registration System
- 8. Library management system
- 9. Passport Automation System

#### **SOFTWARE REQUIRED:**

Languages: C/C++/JDK 1.3, JSDK, WEB BROWSER & UML Any Front End Tools (Like VB, VC++, Developer 2000) Any Back End Tools (Like Oracle, MS-Access, SQL, DB2) Modelling and Design : Rational Rose



2018 Regulation

					2018	Regula	ation						-
Subject Code BCS18L05		bject Na E <b>TWO</b> I	ame : RK PRO	GRAM	IMINO	G LAB		Ty Lb ET	)/	L	T/ S.Lr	P/R	C
	Pre	erequisi	te: : ]	BCS18	ET2			Lł	)	0	0/0	3/0	1
L : Lecture 7						•	Project	R : R	esea	rch C:	Credits		
Ty/Lb/ETL :	Theory	//Lab/E	mbedded	Theory	y and L	ab							
<ul><li>Hand</li><li>Hand</li></ul>	ls on E ls on E ls on E	xperieno xperieno	ce to desi ce to desi ce to devo ge to wor	gn an i elop a F	nterface RMI apj	e to tran plicatio	sfer a fi n for sp	ile be	twee	en two e	s. ends usin	lg FTP	
COURSE O	UTCO	MES (	COs):(3	3- 5)									
CO1		•	o design a		•	•	•	CP an	d U	DP			
CO2		-	n Client /				-						
CO3		•						ng RN	AI a	nd RPC	C concept	s.	
Mapping of COs/POs	Course PO1	PO2	mes with PO3	n Progr PO4	ram Ou PO5	PO6	s (POs) PO7	PO	2	PO9	PO10	PO11	PO12
COS/POS	H H	H	H H	H	H H	M	L PO7	L POG	)	H	M	H	H
CO2	H	H	H	M	H	H	L	L		H	M	H	H
CO3	Н	Н	Н	Н	Μ	Μ	М	L		Н	М	Н	Η
COs / PSOs	PS	01	PSC	)2	PS	03	PS	04		PS	05	Р	SO6
CO1		H	Н		I			H			I		Μ
CO2		H	H					H			I		M
CO3		H	H		I			H	Ļ		I		Μ
H/M/L indic	ates St	rength	of Corre	elation	H- H	igh, M·	• Mediu	ım, L	-Lo	W		[	
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
							~						



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18L05	NETWORK PROGRAMMING LAB	Lb	0	0/0	3/0	1

#### **OBJECTIVES:**

- Hands on Experience to design an application using TCP and UDP sockets.
- Hands on Experience to design an interface to transfer a file between two ends using FTP
- Hands on Experience to develop a RMI application for specific operation
- To have a knowledge to work with Network Simulators
- 1. Networking Commands with options. (Case Study).
- 2. Socket program to extent communication between two deferent ends using TCP.
- 3. Socket program to extent communication between two deferent ends using UDP
- 4. Create a Socket (TCP) between two computers and enable file transfer between them.
- 5. Implementation of RPC in server-client model
- 6. Implementation of ARP/RARP.
- 7. HTTP Socket program to download a web page.
- 8. File transfer in Client-Server architecture using following methods
- a) Using RS232C b) Using TCP/IP
- 9. To implement RMI (Remote Method Invocation)
- 10. Write a network program to broadcast/ multicast a message to a group in the same network.
- 11. Demonstration of Network Simulators.



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18TS2	TECHNICAL SKILL II (EVALUATION)	Lb	0	0/0	3/0	1

#### **OBJECTIVES:**

- To make the students expert in domain specific knowledge.
- To develop professionals with idealistic, practical and moral values.
- To facilitate the students with emerging technology.

From the list of skill development courses declared by the department, the students are expected to acquire the skill and get certified. This will be evaluated at the end of the semester by the faculty.



#### DEPARTMENT OF INFORMATION TECHNOLOGY 2018 Regulation SEMESTER – VI

Subject BCS1				A WAR	MIN		AND D	ATA	]	Гу/ Lb/ /TL	L	T S.J	Lr	P/R	C
<b>T T</b> (	т			te: BCS1		<del>.</del> .				Ty	3	0/	0	0/3	4
L : Lect Ty/Lb/E				nbedded				roject	R : Res	earch C	: Cre	eaits			
OBJEC				6.1	.1 1										
				v of the 1 e challen		-		•			-	d data	ware	ehousi	ng
٠		•		ng soluti	•				•	-	os an	a aata	iii ui c		
COURS	SE O	UTCO	MES (O	COs):(2	3- 5)										
CO1	Unc	lerstanc	l the dif	ference l	oetweer	n Data V	Wareho	using a	nd gene	ral data	base	s			
CO2	Unc	lerstanc	l the dif	ferent st	eps foll	owed ir	n Data r	nining a	and pre-	process	sing t	technic	ques	using	tools
CO3	Abl	e to app	ply Asso	ociation 1	Rule mi	ning an	nd Clust	tering a	pproach	ies					
CO4	Fan	niliarize	e with m	ulti-dim	ensiona	l data c	ubes ar	nd relate	ed analy	vsis					
Mappir	ng of	Course	Outco	mes witl	h Progr	am Ou	itcomes	s (POs)							
COs/P	Os	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO	9	PO 10	PO11 PO1		PO12
CO	L	Н	Н	L	L	L	Μ	Μ	L	L		L			L
CO2	2	Н	Н	Μ	Н	Н	Μ	Μ	М	Μ		Μ	H	[	L
CO3	3	Н	Н	Н	Н	Н	Μ	Μ	L	M		Μ	H	Ι	L
CO4	ŀ	Н	Н	Н	Н	Н	Μ	Μ	Μ	H		Н	H	[	Η
COs / PSOs		PS	01	PSC	02	PS	03	PS	<b>504</b>	I	PSO5	5		PS	06
CO1	L	I	I	Н	[	l	L	]	L		Η			I	I
CO2	2	I	I	Н	[	I	Ĺ	]	H		Η			H	I
CO3	3	I	I	H	[	1	L	]	H		Η			N	1
CO4			I	H			Л		М		Η			F	I
H/M/L	indic	ates St	rength	of Corre	elation	H- H	igh, M	- Mediu	ım, L-l	LOW					
						SS		t.	I II						
		ses		and	e	Program Electives	/es	Practical / Project	Internships / Technical Skill						
	( in	cienc	ring	ties (	I Coi	ı Ele	ectiv	l / Pı	Internships /	lls					
Cateoory	2	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	gram	Open Electives	ctica]	Inte	Soft Skills					
Ċ	)	Bas	Eng Scie	Hur Soci	Proį	Proį	Ope	Prac		Soft					
					~										



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18010	DATA WAREHOUSING AND DATA MINING	Ту	3	0/0	0/3	4

#### **OBJECTIVES:**

- Provide an overview of the methodologies and approaches to data mining
- Gain insight into the challenges and limitations of data mining techniques and data warehousing Applying data mining solutions using common data mining tools

#### UNIT I **DATA WAREHOUSING**

Introduction to Data Warehousing- Advantages- What makes Data Warehousing a reality- Data warehousing Components-Building a Data Warehouse-mapping Data Warehouse to a Multiprocessor-Architecture-DBMS Schemas for Design Support

#### **UNIT II** ETL AND BUSINESS TOOLS

Data Extraction-Cleaning and Transformation tools- Meta data. Reporting and Query tools and Application-OLAP Patterns and Models- Statistics

#### UNIT III **DATA MINING**

Introduction - Data - Types of Data - Data Mining Functionalities - Interestingness of Patterns -Classification of Data Mining Systems - Data Mining Task Primitives - Integration of a Data Mining System with a Data Warehouse – Issues –Data Preprocessing.- Data Cleaning –Missing Values-Noisy Data-Inconsistent Data-Data Integration and Transformation-Data Reduction -Dimensionality Reduction -Evaluation criteria of Various Mining Techniques

#### **UNIT IV** ASSOCIATION RULE MINING AND CLASSIFICATION

Mining Frequent Patterns, Associations and Correlations - Mining Methods - Mining Various Kinds of Association Rules - Constraint Based Association Mining - Classification and Prediction - Decision Tree Induction - Entropy and Classification Algorithms -Bayesian Classification - Rule Based Classification

#### **CLUSTERING TECHNIQUES** UNIT V

Cluster Analysis - Types of Data - Categorization of Major Clustering Methods - Kmeans - Partitioning Methods - Hierarchical Methods - Density-Based Methods - Grid Based Methods - Model-Based Clustering Methods - Clustering High Dimensional Data - Constraint - Based Cluster Analysis - Outlier Analysis –Genetic Algorithm For Mining - Data Mining Applications

#### **TEXT BOOKS:**

- 1. Alex Berson and Stephen J.Smith, "Data Warehousing, Data Mining and OLAP", Tata McGraw -Hill Edition, Thirteenth Reprint 2008.
- Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Third 2. Edition, Elsevier, 2012.

#### **REFERENCE BOOKS:**

- 1. Arun K Pujari (2017) Data Mining Techniques 4th edition, Universities Press (India) Ltd.
- 2. Sam Anahory, Dennis Murry (2004) Data Warehousing in the real world, Pearson Education
- 3. Margaret H. Dunham (2006) Data Mining: Introductory and Advanced Topics, Pearson

# B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

### 12 Hrs

### **12 Hrs**

**Total Hours: 60** 

12 Hrs

# 12 Hrs

12 Hrs



						8 Regu	lation							
Subject Code BIT18003		ЕВ ТЕ		Subjec LOGY			SERVIO	CES	Ty/ Lb/ ETL	L	T/ S.L		R	С
	Pre	erequisi	te: BIT	18I01					Ty	3	0/0	) 0/	0	3
L : Lecture T Ty/Lb/ETL :	Γ: Tuto	rial S.	Lr : Suj	pervise			Project	tR:I	2	n C: C	redits	I		
• T • T aj	The stud To learn	the con y about on on w	cepts of t the Ja veb page	f XML SP and es.	and SC	OAP. rstand	to deve			vel aj	pplicatio	on and	adv	ance
COURSE O														
CO1							TML5 a							
CO2							and im	^						
CO3				•			ce inclu	0	OAP, U	JDDI	and WS	SDL		
Mapping of COs/POs	PO1	PO2	mes wi PO3	th Prog PO4	gram ( PO5	PO6	es (POs	s) <b>PO8</b>	PO9		PO10	PO11	D	012
CO3/1 OS	H	102 M	<u>н</u>	104 L	103 Н	100 M	107 L	100 L	109 H		M	H	1	H
CO2	H	H	H	M	H	H	M		H		M	H		H
CO3	H	H	Н	H	H	M	M	L	H		Μ	H		н
CO3 COs / PSOs	H PS	Н 01	H PS	Н 02	H PS	M O3	M PS	L 04	H	PSO	M 5	H P:	SO6	H
COs /	PS			02	PS			04				P	SO6	
COs / PSOs	PS I	01	PS	O2 I	PS 1	03	PS	04 H		PSO		P:		
COs / PSOs CO1 CO2 CO3	PS I I I	01 H H H	PS H H	02 I I I	PS 1 1	03 L L L	PS F F	O4 1 1 1		PSO:		P:	H	
COs / PSOs CO1 CO2	PS I I I	01 H H H	PS H H	02 I I I	PS 1 1	03 L L L	PS F F	O4 1 1 1		PSO: H H		P:	H H	
COs / PSOs CO1 CO2 CO3	PS I I I	01 H H H	PS H H	02 I I I	PS 1 1	03 L L L	PS F F	O4 1 1 1		PSO: H H		P:	H H	



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18003	WEB TECHNOLOGY AND WEB SERVICES	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- The students will have knowledge about the HTML5 and CSS3
- To learn the concepts of XML and SOAP.
- To study about the JSP and understand to develop basic level application and advance application on web pages.
- To study about the concept of Web services .

#### UNIT I HTML 5 & CSS 3

HTML – forms – frames – tables – web page design – Dynamic HTML – introduction – cascading style sheets – object model and collections –event model – filters and transition – data binding – data control – ActiveX control – handling of multimedia data

#### Unit II XML

Role of XML - XML and The Web - XML Language Basics - Revolutions of XML - Service Oriented Architecture (SOA). XML - Name Spaces - Structuring With Schemas and DTD - Presentation Techniques - Transformation - XML Infrastructure.

#### Unit III SOAP

Overview of SOAP - HTTP - XML-RPC - SOAP: Protocol - Message Structure - Intermediaries - Actors - Design Patterns and Faults - SOAP With Attachments. Introduction to SGML - COM – DCOM – CORBA.

#### UNIT IV SERVER SIDE PROGRAMMING

Introduction to Servlets and Java Server Page (JSP), Servlets lifecycle, Servlet Classes and Sessions. JSP Application Design, JSP objects, sharing data between JSP pages, Sharing Session and Application Data, Database Programming using JDBC, development of java beans in JSP.

#### Unit V WEB SERVICES

Overview - Architecture - Technologies - UDDI - WSDL - ebXML - SOAP and Web Services in E-Com, Rest full in Web service.

#### **TEXT BOOKS:**

- 1. Richard Clark, Oli Studholme, Christopher Murphy and Divya Manian,"Beginning HTML5 and CSS 3" @ Apress, 2012.
- 2. Frank. P. Coyle, "XML, Web Services and The Data Revolution", Pearson Education, 2002.
- 3. Phil Hanna, "JSP: The Complete Reference", McGraw-Hill, 2001

#### **REFERENCE BOOKS:**

 Laura Lemay, Rafe Coburn, Jennifer Kyrnin, "Mastering HTML, CSS & JavaScript Web Publishing", Pearson Education.2015 Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2004.

# **Total Hours: 45**

### 9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs



2018 Regulation

				2018	Regula			1			n				
e: Su	bject N		P / MYS	<b>QL</b>			Lb/	L	T/ S.Lr	P/R	C				
Pre	erequisi	te: BCS	18L03			]	ETL	1	0/1	3/0	3				
		·			•	Project	R : Re	search	C: Credits	1	1				
To learr To learr To unde store an To learr	n install n the ba erstand d retrie n design	PHP and sic and a install th ve the da basic ar	d work o dvance le MySO ta in ap nd advan	on that. concep QL and plicatio	ts of PH work v on with 1	IP lang vith My PHP.	uage. /SQL (	latabas	e in admin	level and	client to				
						and DI	JD								
								[.							
						•									
		_						<b>C</b> -							
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P O 9	PO10	PO11	PO12				
Н	Μ	Н	L	Н	Μ	L	L	Н	Н	Н	Н				
Н	Н	Н	Μ	Н	Н	Μ	L	Н	М	Н	Н				
Н	Н	Н	Η	Н	Μ	Μ	L	Н	М	Н	Н				
PS	01	PS	02	PS	03	PS	<b>SO4</b>		PSO5	P	<b>SO6</b>				
]	H	H	I	]	Ĺ	]	H		Н		Н				
								_	H		H				
								Low	H		H				
		[		11-11	ign, wr	- wieun		LUW							
Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill								
	Pra       F: Tuto:       Theory       E:       The stur       To learr       To learr       To learr       OUTCO       L       A       Course       PO1       H       H       H       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I       I	Prerequisi Prerequisi T: Tutorial S. Theory/Lab/E Te : The students w To learn install To learn the ba To learn design OUTCOMES (0 Learn the Able to o Course Outco PO1 PO2 H M H H H H H H H H Cates Strength	PHHPrerequisite: BCS1 $\Gamma: Tutorial S.Lr : Superstrict Superstrinute Superstrict Superstrict Superstrict Superstrict Supers$	PHP / MYS         Prerequisite: BCS18L03         F: Tutorial S.Lr : Supervised         Theory/Lab/Embedded Theory         E :         The students will learn the tech         To learn install PHP and work of the tech         To learn the basic and advance         To understand install the MyS0 store and retrieve the data in ap         To learn the basic and advance         To understand install the MyS0 store and retrieve the data in ap         To learn the fundamentals of Learn the fundamentals of Able to develop the App         OUTCOMES (COs) : (3-5)         Learn the fundamentals of Able to develop the App         PO1         PO2         PO3         PO4         H       M         H       H       H         H       H       H         H       H       H         H       H       H         H       H       H         H       H       H         H       H       H         H       H       H         H       H       H         H       H	e: Subject Name : PHP / MYSQL Prerequisite: BCS18L03 T : Tutorial S.Lr : Supervised Learning Theory/Lab/Embedded Theory and L E : The students will learn the technology To learn install PHP and work on that. To learn the basic and advance concep To understand install the MySQL and store and retrieve the data in application To learn design basic and advance app OUTCOMES (COS) : (3-5) Learn the fundamentals of HTM Learn the fundamentals of HTM Determine fundamentals of HTM Able to develop the Application Course Outcomes with Program Out PO1 PO2 PO3 PO4 PO5 H M H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H H	E: Subject Name : PHP / MYSQL Prerequisite: BCS18L03 T: Tutorial S.Lr : Supervised Learning P : F Theory/Lab/Embedded Theory and Lab E : The students will learn the technology about s To learn install PHP and work on that. To learn the basic and advance concepts of PF To understand install the MySQL and work v store and retrieve the data in application with To learn design basic and advance application EUTCOMES (COs) : (3-5) Learn the fundamentals of HTML, CSS Learn the fundamentals of HTML, CSS Learn the fundamentals of HTML, CSS Learn the fundamentals database concer Able to develop the Application using F Course Outcomes with Program Outcomes PO1 PO2 PO3 PO4 PO5 PO6 H M H H H M H H H H H H M H H H H H H, H H H H H H H, H H H H H H, H H H H H, H H H H, H H H H, H H	E: Subject Name : PHP / MYSQL Prerequisite: BCS18L03 F : Tutorial S.Lr : Supervised Learning P : Project Theory/Lab/Embedded Theory and Lab E: The students will learn the technology about scripting To learn the basic and advance concepts of PHP lang To understand install the MySQL and work with My store and retrieve the data in application with PHP. To learn design basic and advance applications using DUTCOMES (COs) : (3-5) Learn the fundamentals of HTML, CSS and PI Learn the fundamentals of HTML, CSS and PI Learn the fundamentals database concept and I Able to develop the Application using PHP and Course Outcomes with Program Outcomes (POs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 H M H H H M M H H H H H H H M M H H H H H H H H M M FSO1 PSO2 PSO3 PS H H H H L I H H H H H H H H H H H H H H H H H H	E: Subject Name : Ty/ PHP / MYSQL TUC Prerequisite: BCS18L03 ETL T: Tutorial S.Lr : Supervised Learning P : Project R : Re Theory/Lab/Embedded Theory and Lab E : The students will learn the technology about scripting langu To learn install PHP and work on that. To learn the basic and advance concepts of PHP language. To understand install the MySQL and work with MySQL of store and retrieve the data in application with PHP. To learn design basic and advance applications using PHP and WTCOMES (COs) : (3-5) Learn the fundamentals of HTML, CSS and PHP Learn the fundamentals database concept and MySQL Able to develop the Application using PHP and MyS Course Outcomes with Program Outcomes (POs) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 H M H L H M L L H H H H H H H H H M L H H H H H H H H H H H H H H H H H H H	PHP / MYSQL       Lb/ ETL         Prerequisite: BCS18L03       ETL       1         F: Tutorial S.Lr : Supervised Learning P : Project R : Research Theory/Lab/Embedded Theory and Lab       1         E : The students will learn the technology about scripting languages ba To learn install PHP and work on that. To learn the basic and advance concepts of PHP language. To understand install the MySQL and work with MySQL databas store and retrieve the data in application with PHP. To learn design basic and advance applications using PHP and MySQL         VUTCOMES (COs) : ( 3- 5)       Learn the fundamentals of HTML, CSS and PHP         Learn the fundamentals of HTML, CSS and PHP         Learn the fundamentals database concept and MySQL         Able to develop the Application using PHP and MySQL         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       P       O       9         H       M       H       H       M       L       H         H       H       H       M       L       H         H       H       H       H       H       H         H       H       H       H       H       H         H       H       H       H       H       H         H       H <td< td=""><td>e: Subject Name : Ty/ L T/ PHP / MYSQL TU Lb/ Prerequisite: BCS18L03 FTL 1 0/1 F: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits Theory/Lab/Embedded Theory and Lab E : The students will learn the technology about scripting languages basics. To learn the basic and advance concepts of PHP language. To understand install the MySQL and work with MySQL database in admin store and retrieve the data in application with PHP. To learn design basic and advance applications using PHP and MySQL. WITCOMES (COs) : (3-5) Learn the fundamentals of HTML, CSS and PHP Learn the fundamentals of HTML, CSS and PHP Learn the fundamentals of HTML, CSS and PHP Course Outcomes with Program Outcomes (POS) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P 9 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P 9 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P PO10 9 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P PO10 9 H M H L H M M L L H M H H H H H H H H H H H H H H H H H H H</td><td>e: Subject Name : Ty/ PHP / MYSQL Prerequisite: BCS18L03 FTL Prerequisite: BCS18L03 FTL Prerequisite: BCS18L03 FTL The students sull server the second and t</td></td<>	e: Subject Name : Ty/ L T/ PHP / MYSQL TU Lb/ Prerequisite: BCS18L03 FTL 1 0/1 F: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits Theory/Lab/Embedded Theory and Lab E : The students will learn the technology about scripting languages basics. To learn the basic and advance concepts of PHP language. To understand install the MySQL and work with MySQL database in admin store and retrieve the data in application with PHP. To learn design basic and advance applications using PHP and MySQL. WITCOMES (COs) : (3-5) Learn the fundamentals of HTML, CSS and PHP Learn the fundamentals of HTML, CSS and PHP Learn the fundamentals of HTML, CSS and PHP Course Outcomes with Program Outcomes (POS) PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P 9 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P 9 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P PO10 9 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 P PO10 9 H M H L H M M L L H M H H H H H H H H H H H H H H H H H H H	e: Subject Name : Ty/ PHP / MYSQL Prerequisite: BCS18L03 FTL Prerequisite: BCS18L03 FTL Prerequisite: BCS18L03 FTL The students sull server the second and t				



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18ET3	PHP / MYSQL	ETL	1	0/1	3/0	3

#### **OBJECTIVES:**

- The students will learn the technology about scripting languages basics.
- To learn install PHP and work on that.
- To learn the basic and advance concepts of PHP language.
- To understand install the MySQL and work with MySQL database in admin level and client to store and retrieve the data in application with PHP.
- To learn design basic and advance applications using PHP and MySQL.

#### UNIT I INTRODUCTION

Introduction to Web server and Web browser - Introduction to PHP - Lexical structure - Language basics - Function and String - Default parameters - Variable function, Anonymous function Printing functions - Manipulating and searching strings - Regular expressions.

#### UNIT II ARRAYS

Identifying elements of an array - Indexed Vs Associative arrays - Storing data in arrays - Multidimensional arrays - Extracting multiple values - Converting between arrays and variables - Traversing arrays - Sorting - Action on entire arrays - Using arrays.

#### UNIT III OBJECTS AND WEB TECHNIQUES

OOP – Class – Objects – Introspection – Serialization – Inheritance - Interfaces - Encapsulation HTTP Basics – Variables – Server information – Processing Form, Setting Response headers – maintain state – SSL.

#### UNIT IV DATABASES AND GRAPHICS

Using PHP to access Database – Relational Databases and SQL – MySQLi Object interface – SQLite-Direct file level manipulation – mongoDB. Embedding an image in a page – Basic Graphic concepts – Creating and drawing images.

#### UNIT V FILES AND DIRECTORIES

Filter input – cross-site scripting – Escape output – Session fixation – file uploads – file access – PHP code – Shell commands – Core libraries – Templating systems – Handling output – Error Handling – Performance Tuning.

#### **TEXT BOOKS:**

#### 1. www.spoken-tutorials.org

- 2. Kevin Tatroe, Peter MacIntyre, etal "Programming PHP" O REILLY 3rd Edition 2013
- 3. Luke Welling, Laura Thomson "PHP and MySQL Web Development" Person Education 5th Edition 2016.

#### **REFERENCE BOOKS:**

- 1. Robin Nixon "Learning PHP, MySQL & JavaScript" O REILLY 5th Edition 2015.
- 2. Elizabeth Naramore, Jason Gerner, etal "Beginning PHP5, Apache, MySQL web development" Wrox Publishing – 2005.

### 9 Hrs

9 Hrs

9 Hrs

#### 9 Hrs

#### **9 Hrs** – PHP co

### **Total Hours: 45**



Subject Code: BCS18L1		Subje	ct Nai DA	me : TA MII	NING I	LAB		Ty/ Lb/ ETL		L	T/ S.Lr	I	P/R	С
L : Lectur Ty/Lb/ET	e T : '	Futor	ial S		ipervise			Lb : Project		0 esearc	0/0 h C: Crec		3/0	1
OBJECT • Io • E	TVES lentify xplain esign	and the a ris	categ variou k man	ories the is risk co agement	e variou ontrol m t progra	s risks f neasures	face by availat	ble						
CO2 un m	ndersta anage	and th ment	he app (or m	proach to nitigation	o risk m n)	anagem	ent thro	ough ris			risks fac on, risk m		-	
CO3 un Mapping				onal risl					5)					
COs/ POs	PO		PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8		PO9	PO 10	PO11	PO 12
CO1	H	I		Μ	М	Н	Μ	L	Μ		М	Μ	Η	Н
CO2 CO3	L H		н И	M L	H H	H M	M L	M H	L M		L L	M L	M M	M M
COs / PSOs		PSO:		PS			03		PSO4		PSO5		PSO	
CO1	Η			М		Μ		Μ			H	Μ	Μ	L
CO2	M			M		M		L			M	H	L	
CO3 H/M/L ir	H dicat	es St	rengt	L h of Coi	rrelatio	L n H-J	High. N	M M- Med	ium. L	-Low	Μ	Μ	Μ	Μ
			8*				, ·							
Category		Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
		. –										İ		



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18L11	DATA MINING LAB	Lb	0	0/0	3/0	1

#### **OBJECTIVES:**

- Identify and categories the various risks face by an organization;
- Explain the various risk control measures available
- Design a risk management program for a business organization.

### LIST OF EXPERIMENTS

- 1. Introduction to the Weka machine learning toolkit
- 2. Classification Introduction to exploratory data analysis using Rattle an open source Tool(R)
- 3. Introduction to regression using Rattle an open source Tool. (R)
- 4. Using the Weka toolkit Part 1
- 5. Classification using the Weka toolkit Part 2
- 6. Performing data preprocessing for data mining in Weka
- 7. Performing clustering in Weka
- 8. Association rule analysis in Weka
- 9. Data mining case study using the CRISP-DM standard
- 10. Data mining case study using the CRISP-DM standard



	bject Na	ame ·										
	VEB TH	ECHNO	LOGY LA		VEB SI	ERVIC		Ty/ Lb/ ETL	L	T/ S.Lr	.   P/F	C C
Dre	erecuisi	te·RIT18	П 01					Ib	0	0/0	3/0	) 1
				Learnin	g P : P	roject I	R : Res		•		5/0	1
: Theory	/Lab/Ei	nbedded	Theory	and La	ıb	-						
• •	To have To have	e knowle e knowle	dge to c dge to c	lesign v lesign a	vebpage dynam	e using ( ic web	site us	-	1L and	XSLT.		
OUTCO	MES (C	COs):(3	3- 5)									
A	bility to	o design	a basic	website	using I	HTML a	and CS	SS				
	U			•	0	ing form	ns					
		1										
-					r	· ,			- 1-			1
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO			PO11	PO12
Н	М	Н	L	Н	Μ	L	L	H	[	Μ	Н	Н
H	H	Н	Μ	H	H	Μ	L	H	[	Μ	Η	H
H	Μ	Н	Μ	H	Μ	Μ	L	H		Μ	Η	Η
PS	01	PS	02	PS	03	PS	604		PSO5	5	P	<b>SO6</b>
]	H	H	[	]	Ĺ	]	H		Н			H
]	H	H	[	]	L	]	H		Н			H
									Н			H
cates St	rength	of Corre	elation	H- Hi	igh, M-	Mediu	<b>m, L-</b> ]	Low				
Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
	F: Tutor     : Theory     : Theory     /E:     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •     •	T: Tutorial       S.         Theory/Lab/Ei         •       To lear         •       To have         •       To lear         OUTCOMES (O       Ability to         To design       To design         To devel       Course Outco         PO1       PO2         H       M         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H         H       H <td>T: Tutorial       S.Lr : Super Strength of Correct Strength of Cor</td> <td><ul> <li>Theory/Lab/Embedded Theory/E :         <ul> <li>To learn about to develop To have knowledge to develop to To have knowledge to develop To learn and develop to To learn and develop to To design user interactive To design user interactive To develop RMI and RPO</li> <li>Course Outcomes with Program PO1 PO2 PO3 PO4</li> <li>H M H L</li> <li>H M H M</li> <li>PSO1 PSO2</li> <li>H H H</li> <li>H H</li></ul></li></ul></td> <td>T: TutorialS.Lr : Supervised Learnin: Theory/Lab/Embedded Theory and La/E :• To learn about to develop an ov• To have knowledge to design v• To have knowledge to design a• To learn and develop to design a• To learn and develop to design a• To design user interactive web pTo develop RMI and RPC applicCourse Outcomes with Program OuPO1PO2PO3PO4PO5HMHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH</td> <td>T: Tutorial       S.Lr : Supervised Learning P : P         : Theory/Lab/Embedded Theory and Lab         'E :         • To learn about to develop an own web         • To have knowledge to design webpage         • To have knowledge to design a dynam         • To learn and develop to design mail co         OUTCOMES (COs) : (3-5)         Ability to design a basic website using I         To design user interactive web pages us         To develop RMI and RPC application.         Course Outcomes with Program Outcomes         PO1       PO2         PO3       PO4         PO5       PO6         H       M       H         H       M       H         H       H       M         H       H       M         H       H       M         H       H       M         H       H       M         H       H       L         H       H       L         H       H       L         H       H       L         H       H       L         H       H       L         H       H       L         H       H&lt;</td> <td>F: Tutorial       S.Lr: Supervised Learning       P: Project       H         F: Theory/Lab/Embedded Theory and Lab       To learn about to develop an own web site.       To have knowledge to design webpage using 0         •       To have knowledge to design a dynamic web       •       To have knowledge to design a dynamic web         •       To have knowledge to design a dynamic web       •       To learn and develop to design mail communi         DUTCOMES (COs) : (3-5)       Ability to design a basic website using HTML at To design user interactive web pages using form       To develop RMI and RPC application.         Course Outcomes with Program Outcomes (POs)       PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       M       H       H       M       H       M       M         PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       M       H       M       M       M       M         H       H       M       H       M       M       M         H       H       H       M       M       M       M         H       H       H       L       I       I       I       I         H       H       H       L&lt;</td> <td>I: Tutorial       S.Lr : Supervised Learning       P : Project       R : Res         : Theory/Lab/Embedded Theory and Lab         <b>T :</b>       • To learn about to develop an own web site.         • To have knowledge to design webpage using CSS.         • To have knowledge to design a dynamic web site us         • To have knowledge to design a dynamic web site us         • To learn and develop to design mail communication         <b>DUTCOMES (COs) : (3- 5)</b>         Ability to design a basic website using HTML and CS         To design user interactive web pages using forms         To develop RMI and RPC application.         <b>Course Outcomes with Program Outcomes (POs)</b>         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8         H       M       H       L       H       M       L         H       M       H       M       L       L         H       H       M       H       H       L         H       H       H       H       H       H         H       H       H       H       H       H         H       H       H       H       H       H         H       H       H       H       H<td>F: Tutorial       S.Lr : Supervised Learning       P : Project       R : Research (Complete esearch (Complete Research (CompleteResearch (Complet</td><td>F: Tutorial       S.Lr : Supervised Learning       P: Project       R : Research C: Cree         : Theory/Lab/Embedded Theory and Lab         <b>/E :</b>       •       To learn about to develop an own web site.         •       To have knowledge to design webpage using CSS.         •       To have knowledge to design a dynamic web site using XML and         •       To have knowledge to design a dynamic web site using XML and         •       To learn and develop to design mail communication.         <b>DUTCOMES (COs) : (3-5)</b>       •         Ability to design a basic website using HTML and CSS         To design user interactive web pages using forms         To develop RMI and RPC application.         <b>Course Outcomes with Program Outcomes (POs)</b>         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       I         H       H       H       H       H       H       H       H       H         H       H       M       H       H       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H       H       H       H       H</td><td>F: Tutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits         Theory/Lab/Embedded Theory and Lab         <b>F:</b>         • To learn about to develop an own web site.         • To have knowledge to design webpage using CSS.         • To have knowledge to design a dynamic web site using XML and XSLT.         • To learn and develop to design mail communication.         <b>DUTCOMES (COs) : (3-5)</b>         Ability to design a basic website using HTML and CSS         To develop RMI and RPC application.         <b>Course Outcomes with Program Outcomes (POs)</b>         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO1         <b>R M H H M H H M H H H M H H M H H H H H H H H H H H H H H H H H H H H H H H H H H H H H</b></td><td>T: Tutorial       S.Lr : Supervised Learning       P : Project       R : Research C: Credits         : Theory/Lab/Embedded Theory and Lab         Te :       •       To learn about to develop an own web site.         •       To have knowledge to design webpage using CSS.         •       To have knowledge to design a dynamic web site using XML and XSLT.         •       To learn and develop to design and communication.         OUTCOMES (COs) : (3-5)         Ability to design a basic website using HTML and CSS         To develop RMI and RPC application.         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO1       PO11         H       M       H       H       M       H       H       M       H         PS01       PS02       PS03       PS04       PS05       PS         H       H       H       H       H       H       H         H       H       L       H       H       H         Yes       PS01       PS02       PS03       PS04       PS05       PS         H       H       L       H       H       H</td></td>	T: Tutorial       S.Lr : Super Strength of Correct Strength of Cor	<ul> <li>Theory/Lab/Embedded Theory/E :         <ul> <li>To learn about to develop To have knowledge to develop to To have knowledge to develop To learn and develop to To learn and develop to To design user interactive To design user interactive To develop RMI and RPO</li> <li>Course Outcomes with Program PO1 PO2 PO3 PO4</li> <li>H M H L</li> <li>H M H M</li> <li>PSO1 PSO2</li> <li>H H H</li> <li>H H</li></ul></li></ul>	T: TutorialS.Lr : Supervised Learnin: Theory/Lab/Embedded Theory and La/E :• To learn about to develop an ov• To have knowledge to design v• To have knowledge to design a• To learn and develop to design a• To learn and develop to design a• To design user interactive web pTo develop RMI and RPC applicCourse Outcomes with Program OuPO1PO2PO3PO4PO5HMHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH	T: Tutorial       S.Lr : Supervised Learning P : P         : Theory/Lab/Embedded Theory and Lab         'E :         • To learn about to develop an own web         • To have knowledge to design webpage         • To have knowledge to design a dynam         • To learn and develop to design mail co         OUTCOMES (COs) : (3-5)         Ability to design a basic website using I         To design user interactive web pages us         To develop RMI and RPC application.         Course Outcomes with Program Outcomes         PO1       PO2         PO3       PO4         PO5       PO6         H       M       H         H       M       H         H       H       M         H       H       M         H       H       M         H       H       M         H       H       M         H       H       L         H       H       L         H       H       L         H       H       L         H       H       L         H       H       L         H       H       L         H       H<	F: Tutorial       S.Lr: Supervised Learning       P: Project       H         F: Theory/Lab/Embedded Theory and Lab       To learn about to develop an own web site.       To have knowledge to design webpage using 0         •       To have knowledge to design a dynamic web       •       To have knowledge to design a dynamic web         •       To have knowledge to design a dynamic web       •       To learn and develop to design mail communi         DUTCOMES (COs) : (3-5)       Ability to design a basic website using HTML at To design user interactive web pages using form       To develop RMI and RPC application.         Course Outcomes with Program Outcomes (POs)       PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       M       H       H       M       H       M       M         PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       M       H       M       M       M       M         H       H       M       H       M       M       M         H       H       H       M       M       M       M         H       H       H       L       I       I       I       I         H       H       H       L<	I: Tutorial       S.Lr : Supervised Learning       P : Project       R : Res         : Theory/Lab/Embedded Theory and Lab <b>T :</b> • To learn about to develop an own web site.         • To have knowledge to design webpage using CSS.         • To have knowledge to design a dynamic web site us         • To have knowledge to design a dynamic web site us         • To learn and develop to design mail communication <b>DUTCOMES (COs) : (3- 5)</b> Ability to design a basic website using HTML and CS         To design user interactive web pages using forms         To develop RMI and RPC application. <b>Course Outcomes with Program Outcomes (POs)</b> PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8         H       M       H       L       H       M       L         H       M       H       M       L       L         H       H       M       H       H       L         H       H       H       H       H       H         H       H       H       H       H       H         H       H       H       H       H       H         H       H       H       H       H <td>F: Tutorial       S.Lr : Supervised Learning       P : Project       R : Research (Complete esearch (Complete Research (CompleteResearch (Complet</td> <td>F: Tutorial       S.Lr : Supervised Learning       P: Project       R : Research C: Cree         : Theory/Lab/Embedded Theory and Lab         <b>/E :</b>       •       To learn about to develop an own web site.         •       To have knowledge to design webpage using CSS.         •       To have knowledge to design a dynamic web site using XML and         •       To have knowledge to design a dynamic web site using XML and         •       To learn and develop to design mail communication.         <b>DUTCOMES (COs) : (3-5)</b>       •         Ability to design a basic website using HTML and CSS         To design user interactive web pages using forms         To develop RMI and RPC application.         <b>Course Outcomes with Program Outcomes (POs)</b>         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       I         H       H       H       H       H       H       H       H       H         H       H       M       H       H       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H       H       H       H       H</td> <td>F: Tutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits         Theory/Lab/Embedded Theory and Lab         <b>F:</b>         • To learn about to develop an own web site.         • To have knowledge to design webpage using CSS.         • To have knowledge to design a dynamic web site using XML and XSLT.         • To learn and develop to design mail communication.         <b>DUTCOMES (COs) : (3-5)</b>         Ability to design a basic website using HTML and CSS         To develop RMI and RPC application.         <b>Course Outcomes with Program Outcomes (POs)</b>         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO1         <b>R M H H M H H M H H H M H H M H H H H H H H H H H H H H H H H H H H H H H H H H H H H H</b></td> <td>T: Tutorial       S.Lr : Supervised Learning       P : Project       R : Research C: Credits         : Theory/Lab/Embedded Theory and Lab         Te :       •       To learn about to develop an own web site.         •       To have knowledge to design webpage using CSS.         •       To have knowledge to design a dynamic web site using XML and XSLT.         •       To learn and develop to design and communication.         OUTCOMES (COs) : (3-5)         Ability to design a basic website using HTML and CSS         To develop RMI and RPC application.         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO1       PO11         H       M       H       H       M       H       H       M       H         PS01       PS02       PS03       PS04       PS05       PS         H       H       H       H       H       H       H         H       H       L       H       H       H         Yes       PS01       PS02       PS03       PS04       PS05       PS         H       H       L       H       H       H</td>	F: Tutorial       S.Lr : Supervised Learning       P : Project       R : Research (Complete esearch (Complete Research (CompleteResearch (Complet	F: Tutorial       S.Lr : Supervised Learning       P: Project       R : Research C: Cree         : Theory/Lab/Embedded Theory and Lab <b>/E :</b> •       To learn about to develop an own web site.         •       To have knowledge to design webpage using CSS.         •       To have knowledge to design a dynamic web site using XML and         •       To have knowledge to design a dynamic web site using XML and         •       To learn and develop to design mail communication. <b>DUTCOMES (COs) : (3-5)</b> •         Ability to design a basic website using HTML and CSS         To design user interactive web pages using forms         To develop RMI and RPC application. <b>Course Outcomes with Program Outcomes (POs)</b> PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       I         H       H       H       H       H       H       H       H       H         H       H       M       H       H       H       H       H       H         H       H       H       H       H       H       H       H         H       H       H       H       H       H       H       H       H	F: Tutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits         Theory/Lab/Embedded Theory and Lab <b>F:</b> • To learn about to develop an own web site.         • To have knowledge to design webpage using CSS.         • To have knowledge to design a dynamic web site using XML and XSLT.         • To learn and develop to design mail communication. <b>DUTCOMES (COs) : (3-5)</b> Ability to design a basic website using HTML and CSS         To develop RMI and RPC application. <b>Course Outcomes with Program Outcomes (POs)</b> PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO1 <b>R M H H M H H M H H H M H H M H H H H H H H H H H H H H H H H H H H H H H H H H H H H H</b>	T: Tutorial       S.Lr : Supervised Learning       P : Project       R : Research C: Credits         : Theory/Lab/Embedded Theory and Lab         Te :       •       To learn about to develop an own web site.         •       To have knowledge to design webpage using CSS.         •       To have knowledge to design a dynamic web site using XML and XSLT.         •       To learn and develop to design and communication.         OUTCOMES (COs) : (3-5)         Ability to design a basic website using HTML and CSS         To develop RMI and RPC application.         Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO1       PO11         H       M       H       H       M       H       H       M       H         PS01       PS02       PS03       PS04       PS05       PS         H       H       H       H       H       H       H         H       H       L       H       H       H         Yes       PS01       PS02       PS03       PS04       PS05       PS         H       H       L       H       H       H



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18L03	WEB TECHNOLOGY AND WEB		0	0/0	•	
	SERVICES LAB	Lb			3/0	1

#### **OBJECTIVES:**

- To learn about to develop an own web site.
- To have knowledge to design webpage using CSS.
- To have knowledge to design a dynamic web site using XML and XSLT.
- To learn and develop to design mail communication.
- 1. Create a web page with the following using HTML
  - i) To embed an image map in a web page
  - ii) To fix the hot spots
  - iii) Show all the related information when the hot spots are clicked.
- 2. Create a web page with all types of Cascading style sheets.
- 3. Client Side Scripts for Validating Web Form Controls using DHTML
- 4. Write a program in Java to create applets incorporating the following features:
  - i. Create a color palette with matrix of buttons Set background and foreground of the control text area by selecting a color from color palette.
  - ii. In order to select Foreground or background use check box control as radio buttons
  - iii. To set background images
- 5. Programs using XML Schema XSLT/XSL
- 6. Create a Web form for an online library. This form must be able to accept the Membership Id of the person borrowing a book, the name and ID of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the book is to be returned. You can enhance the look of the page by using various ASP.NET controls.
- 7. Create a JSP application. Send a simple E-Mail to your friends
- 8. Consider a case where we have a web Service- an airline service and a travel agent and the travel agent is searching for an airline. Implement this scenario using Web Services and Data base.



2018 Regulation													
Subject Code BEN18SK2		Subject Name : SOFT SKILL – II							Ty/ Lb/	L	T/ S.L	P/R	C
221 (10011									ET		r		
									L				
	D	·		100121					DTI	0	0/0	2/0	1
L · Lecture T	Prerequisite: BEN18SK1         ETI           Γ : Tutorial         S.Lr : Supervised Learning P : Project R : Research									0 [•] Cred	0/0 its	3/0	1
T/L/ETL : Th			-			-5	Tojeet	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		. 0100	110		
OBJECTIV	E :			-									
		haviour	al pattern	ns of stu	dents.								
	<ul><li>To bring behavioural patterns of students.</li><li>To train them for corporate culture.</li></ul>												
		lf aware											
		nfidence		ng tha i	ntomio	wa and	davalor	intorn	orconal	rolatio	nchin		
• To tr	amme	student	s for faci	ing the i	inter vie	ws and	develo	^b interp	ersonar	Telatio	nsnip.		
$COUDSE OUTCOMES (COs) \cdot (3, 5)$													
COURSE OUTCOMES (COs) : ( 3- 5)CO1Recognize and apply arithmetic knowledge in a variety of contexts.													
CO2	Ability to identify and critically evaluate philosophical arguments and defend them from												
	criticism.												
CO3	Define data and interpret information from graphs.												
Mapping of	Course	e Outco	mes witl	h Progr	am Ou	itcomes	s (POs)						
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO	010 P	011	PO12
CO1	Η	Н	Η	Η	Η	Н	L	L	Η	Μ	H		H
CO2	Μ	Μ	Μ	Н	L	Н	L	Н	Η	Н	H		Ĺ
CO3	Η	H	Н	Η	Η	Н	Μ	Μ	Η	Η	H		H
COs / PSOs	PSO1		PSO2		PSO3		PSO4		PSO	5			
CO1													
CO1 CO2													
H/M/L indic	entos St	ronath	of Corre	alation	<u>н</u> , н	iah M	Modiu	m I_I	OW				
	acost	lengen			11-11		linear	, 12-1	20 10				
			lces					ili					
			cier					l Sk					
			1 S					lica					
		ces	ocia					chr					
ry		ienc	l Sí		ves		sct	/ Te					
.0ge	ces	Sc	anc	ore	ecti	ves	roje	ips					
Category	ien	ring	ties	Co	Εle	ecti	1/P	nsh	lls				
-	c Sc	nee	ani	ram	ram	ы	tica	Internships / Technical Skill	Ski				
	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	<b>Dpen Electives</b>	Practical / Project	I	Soft Skills				
	Щ								(J				
									$\checkmark$				
		1	1	1		1	1	1					



2018 Regulation

Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
BEN18SK2	SOFT SKILL - II	ETL	0	0/0	3/0	1

#### **OBJECTIVES:**

- To bring behavioural patterns of students.
- To train them for corporate culture.
- To create self awareness.
- To build confidence.
- To train the students for facing the interviews and develop interpersonal relationship.

#### UNIT I LOGICAL REASONING I

Logical Statements - Arguments - Assumptions - Courses of Action.

#### UNIT II LOGICAL REASONING II

Logical conclusions – Deriving conclusions from passages – Theme detection.

#### UNIT III ARITHMETICAL REASONING I

Number system – H.C.F & L.C.M – Problem on ages – Percentage – Profit & Loss – Ratio & Proportion – Partnership.

#### UNIT IV ARITHMETICAL REASONING II

Time & Work – Time & Distance – Clocks – Permutations & Combinations – Heights & Distances – Odd man out and Series.

#### UNIT V DATA INTERPRETATION

Tabulation – Bar graphs – Pie graphs – Line graphs.

#### **REFERENCE BOOK:**

1. R.S.Agarwal, A modern approach to Logical Reasoning, S.Chand & Co., (2017).

2. R.S.Agarwal, A modern approach to Verbal and Non verbal Reasoning, S.Chand & Co., (2017).

3. R.S.Agarwal, Quantitative Aptitude for Competitive Examinations, S.Chand & Co., (2017).

4. A.K.Gupta, Logical and Analytical Reasoning, Ramesh Publishing House, (2014).

5. B.S.Sijwali, Indu sijwali, A new approach to Reasoning (Verbal and Non verbal), Arihant Publishers, (2014).



Subject Cod BIT18L04	Μ	ibject N I <b>NI PR</b> ITERN	OJECT	/ INPL		<u>Regula</u> `RAINI			Ty/ Lb/ ET L	L	T/ S.L r	P/R	C C
			te : NIL						Lb	0	0/0	3/0	1
L : Lecture 7 T/L/ETL : T			-			ng P:F	roject	R : Res	earch C:	Credits	8		
<b>OBJECTIV</b> Industry/ Co	<b>E</b> :The	e main c	bjective	•		raining	is to pr	ovide a	short-te	rm wor	k expe	erience	e in an
COURSE C	OUTCO	MES (	COs):(	3- 5)									
CO1	]	Fo get a	n insight	of an in	dustry	/ organi	zation/o	compan	y pertain	ing to	the do	omain	of study
CO2	1	Го acqui	re skills	and kno	wledge	e for a s	mooth t	ransitio	on into th	e caree	r.		
CO3		•			Ũ				ssional n				
Mapping of	Cours	e Outco	mes wit	h Progi	ram Ou	itcomes	s (POs)						
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO9	PO1	0 P	011	PO12
CO1	Μ	L	L	L	L	Н	Н	Н	Η	Н	Η	[	Н
CO2	H	Μ	Н	H	М	Н	Н	Н	H	Н	H	[	Μ
CO3	Н	Н	Н	H	Μ	H	Н	Н	H	Н	H	[	Μ
COs / PSOs	PS	501	PS	02	PS	03	PS	<b>504</b>	PSO5				
CO1													
H/M/L indi	cates St	trength	of Corr	elation	H- H	igh, M-	Mediu	ım, L-I	Low	1			
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
						_			-				
								$\checkmark$					



Subject Code	Subject Name	Ty/ Lb/	L	T/ S.Lr	P/R	С
BIT18L04	MINI PROJECT /INPLANT TRAINING / INTERNSHIP	Lb	0	0/0	3/0	1

#### **OBJECTIVE :**

• The main objective of the In-plant training is to provide a short-term work experience in an Industry/ Company/ Organization



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18TS3	TECHNICAL SKILL III (EVALUATION)	Lb	0	0/0	3/0	1

#### **OBJECTIVES:**

- To make the students expert in domain specific knowledge.
- To develop professionals with idealistic, practical and moral values.
- To facilitate the students with emerging technology.

From the list of skill development courses declared by the department, the students are expected to acquire the skill and get certified. This will be evaluated at the end of the semester by the faculty.



#### DEPARTMENT OF INFORMATION TECHNOLOGY 2018 Regulation SEMESTER – VII

Subject Code BIT18006	e: Su	bject Na CI	ame : LOUD T	ECHN	OLOG	Y	I	Гу/ Lb/ TL	L	T/ S.L		P/R	C
	Pre	erequisi	te: BCS1	7I01				Ту	3	0/0	)	0/0	3
L : Lecture T	: Tuto	rial S.	Lr : Supe	ervised	Learnin	ng P:P	roject	R : Res	search C	: Credi	its		1
T/L/ETL : TI	heory/L	ab/Emb	edded T	heory a	nd Lab								
OBJECTIV	ES :												
• To le	earn Clo	oud com	puting in	nfrastru	cture ar	nd servi	ces.						
• To a	cquire k	nowled	lge about	cloud	storage.								
• To u	ndersta	nd cloue	d comput	ting sec	urity.								
• To te	est web	applicat	tion in cl	oud pla	tform.								
<b>COURSE O</b>	UTCO	MES (O	COs):(3	3- 5)									
CO1		t	Jndersta	nd the a	pplicati	on of a	cloud co	omputi	ng				
CO2		F	Recogniz	e the in	iportan	ce cloud	d securi	ty.					
CO3		Ι	Design th	e effici	ent flex	ible clo	ud app	licatior	IS				
Mapping of	Course	e Outco	mes witl	h Progi	ram Ou	tcomes	(POs)						
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO	PC		PO11	PO12
											)		
CO1	H	Н	Н	Μ	Н	Μ	Μ	Μ	H			Н	Н
CO1 CO2	H H	H M	H H	M M	H H	M M	M M	M H	H M		1	H M	H M
										Ν	И Н		
CO2 CO3 COs/	H	M H	Н	M M	Н	M M	M M	Н	M H	N H	И Н	M H	Μ
CO2 CO3 COs / PSOs	H H PS	M H	H M	M M D2	H H	M M 03	M M PS	H M	M H	N H N PSO5	И Н	M H PS	M M
CO2 CO3 COs/	H H PS	M H O1	H M PSO	M M D2	H H PS	M M O3 A	M M PS	H M SO4	M H	N F N	И Н	M H PS	M M 06
CO2 CO3 COs / PSOs CO1	H H PS I I	M H O1	H M PSC	M M D2	H H PS	M M O3 A H	M M PS	H M SO4 H	M H	M PSO5 M	И Н	M H PS	M M 06 M
CO2           CO3           COs /           PSOs           CO1           CO2           CO3	H H PS I H	M H O1 H H H	H M PSC H M M	M M D2	H H PS M H	M M O3 A H H	M M PS	H M 604 H M	M H F	N H PSO5 M H	И Н	M H PS	M M O6 M H
CO2 CO3 COs / PSOs CO1 CO2	H H PS I H	M H O1 H H H	H M PSC H M M	M M D2	H H PS M H	M M O3 A H H	M M PS	H M 604 H M	M H F	N H PSO5 M H	И Н	M H PS	M M O6 M H



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18006	CLOUD TECHNOLOGY	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To learn Cloud computing infrastructure and services.
- To acquire knowledge about cloud storage.
- To understand cloud computing security. •
- To test web application in cloud platform. •

#### **CLOUD COMPUTING INTRODUCTION UNIT I**

Characteristics - cloud models - cloud services - cloud based services and applications - virtualization -Load balancing – deployment – replication – monitoring – MapReduce – Identity and Access management.

#### CLOUD SERVICES AND PLATFORMS **UNIT II**

Compute services – storage services – database services – application services – content delivery services – analysis services - Deployment & management services - identity and Access management services open source private cloud software - Hadoop MapReduce job execution - Hadoop schedulers - Hadoop cluster setup

#### UNIT III **CLOUD APPLICATION DESIGN & PYTHON**

Design consideration for cloud applications - reference architecture for cloud applications - cloud application design methodologies - data storage approaches – Python data types & data structures – control flow - functions - modules - packages - file handling - classes.

#### UNIT IV **CLOUD APPLICATION DEVELOPMENT**

Python for Amazon web services - Google cloud platform - windows Azure - packages of Internet -JSON – XML – HTTPLib and URLLib – Web application framework – Django – design approaches – image processing App – document storage app – MapReduce app.

#### **ADVANCED APPICATIONS** UNIT V

Clustering Big Data - Classification of Big Data - multimedia cloud - Streaming protocols - cloud application benchmarking and tuning - workload characteristics - application performance matrix - design consideration - benchmarking tools- deployment prototyping - CSA cloud security architecture authentication - authorization - data security - auditing.

#### **TEXT BOOKS:**

- 1. Arshdeep Bahga et al, "Cloud computing a hands-on approach" Universities press 2014
- 2. Anthony T. Velte et al, "Cloud Computing A Practical Approach" Tata McGraw-Hill 2013 3. Zaigham Mahmood et al, "Cloud Computing Concept Technology Architecture" Pearson, 2014.

#### **REFERENCE BOOKS:**

- 1. Barrie Sosinsky, "Cloud Computing Bible" Wiley India Publication 2011
- 2. Rishabh Sharma "Cloud Computing Fundamentals, Industry Approach and Trends" Wiley 2015.
- 3. David Crookes "Cloud Computing in easy steps" McGraw Hill 2012

#### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

# 9Hrs

9Hrs

9Hrs

#### 9Hrs

# 9Hrs

#### **Total Hours: 45**



2018 Regulation

						2018	Regula	ation						
Subject	Code	: Su	bject Na							Ty/	L	Τ/	P/R	С
<b>BCS18</b>	)12		<b>OPEN</b>	SOURC	CE SCF	RIPTIN	<b>IG LAN</b>	<b>IGUA</b>	GES	Lb/		S.L		
										ЕТ		r		
										L		-		
		Dre	roquisi	te: BCS1	8FT3					Ty	3	0/0	0/0	3
L·Loot	uro T		-	Lr : Supe		Loornir		Project	D · Door	-			0/0	3
				mbedded			•	Toject	R. Rest	arch C.	Clean	8		
OBJEC			/Lau/L	mocuucu			a0							
ODJEC			onte wil	ll have ki	nowlede	re ahou	t the sc	rinting	language	26				
				aScript la										
				RL langu										
				the Pyth	•	•					evel n	rogram	and a	dvance
-				vorking,					to write		ever pi	ogram	and a	uvanee
_	_	-		RUBY la					to write	nrogran	าร			
COLIBS		•		COs): (3		unu na		alcuge		program				
COUR:						0119000	concer	te and t	technolo	av for v	veh site	design	<u>,</u>	
CO1 CO2			to understood scripting languages concepts and technology for web site design s have knowledge to develop an interactive web site using scripting languages.											
CO2 CO3				ge have t					site usin	ig script	ing ian	guages	•	
				mes wit										
COs/PC	-	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	DO1		<b>)11</b>	PO12
	<b>J</b> S										PO1			
CO1		H	M	H	L	H	M		L	H	M		H	H
CO2		H	H	H	M	M	H	M	L	H	M		H	H
CO3		H	Μ	H	Μ	H	Μ	Μ	L	Н	M		H	H
COs /		PS	01	PSC	32	PS	03	PS	504	P	505		PSC	)6
PSOs														
CO1		I	ł	H	[		Ĺ	]	H		H		H	
CO2		I	ł	H	[	I	Ĺ	]	H		H		H	
CO3			ł	H			L		H		H		H	
H/M/L	indic	ates St	rength	of Corre	elation	H- H	igh, M	- Mediu	um, L-L	ow				
									kill					
				-					1 S]					
			es	cial					ica					
				So		es		it (	hn					
	În l	S	cit			tiv	S	jec	lec					
De la	Calcgury	nce	a a	s ai	ore	lec	ivε	Prc	[/:					
to to	Ca	ciel	rin	s	JC	Program Electives	Open Electives	Practical / Project	ips	lls				
		Š	nee	ani Ices	ran	ran	E	ica	hsn	Ski				
		ić.	·E	n n	50	50	en	ct	L E	<u> </u>				
		JS	36	E .E	0	0	õ.	ā	te	J				
		Basic Sciences	Engineering Scienc	Humanities and Sciences	<ul> <li>Program Core</li> </ul>	Pro	Op	Pra	Internships / Technical Skill	Soft Skills				



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18012	OPEN SOURCE SCRIPTING LANGUAGES	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- The students will have knowledge about the scripting languages
- To learn the JavaScript language and ability to write program on it.
- To learn the PERL language and ability to write program on it.
- To study about the Python language and understand to write basic level program and advance program on networking, web scripting on web pages.
- To study about RUBY language and have knowledge to write programs.

#### UNIT I INTRODUCTION TO SCRIPTING LANGUAGES

Introduction to Scripting: Scripts and Programs, Origin of Scripting, Scripting Today, Characteristics of Scripting Languages, Uses for Scripting Languages, Web Scripting, and the universe of Scripting Languages.

#### UNIT II JAVASCRIPT

JavaScript introduction – control structures – functions – arrays – document objects model – Event handling – object oriented in JavaScript - simple web applications

#### UNIT III PERL

PERL- Names and Values, Variables, Scalar Expressions, Control Structures, arrays, list, hashes, strings, pattern and regular expressions, subroutines. Finer points of looping, pack and unpack, file system, eval, data structures, packages, modules, objects, interfacing to the operating system, Creating Internet ware applications, Dirty Hands Internet Programming, security Issues.

#### **UNIT IV PYTHON**

Python: Installing Python,Introduction to Python language, Basic syntax, interactive shell, editing, saving, and running a script. The concept of data types; variables, assignments; immutable variables-operators and expressions - Conditions and Control statements – String handling, files and directories - functions and its types.Simple Graphics and Image Processing, Python with OOP - Exception handling

#### **UNIT V RUBY**

Introduction to RUBY : Basics, Comments, Variables Strings, Operators, Conditional Statements, Arrays and Hashes, Methods Files, classes, Exception Handling Introduction to Ruby on Rail .

#### **TEXT BOOKS:**

- 1. David Barron, "The World of Scripting Languages", Wiley Publications, 2002
- 2. Kenneth A. Lambert, Martin Osborne, "Fundamentals of Python: First Programs", Contributing Author published by Course Technology, Cengage Learning Publications.2010.
- 3. Michael Fitzgerald, "Learning Ruby", O'Reilly Publications, 2007.

#### **REFERENCE BOOKS:**

- 1. Richard Clark, Oli Studholme, Christopher Murphy and Divya Manian, "Beginning HTML5 and CSS 3" @ Apress.
- 2. Jennifer Campbell, Paul Gries, Jason Montojo, Greg Wilson, "Practical Programming An Introduction to Computer Science Using Python", The Pragmatic Bookshelf Raleigh, North Carolina Dallas, Texas, 2009
- 3. Tom Christiansen, brian d foy & Larry Wall, with Jon Orwant, "Programming Perl, Fourth Edition", O'Reilly, 2012.

# **10 Hrs**

9 Hrs

**Total Hours: 45** 

#### 9 Hrs

9 Hrs

8 Hrs



					2	2018 R	egulati	on						
Subject		t Name							Ту	y/	L	<b>T</b> /	P/R	С
Code:	]		GEMEN						Lł			S.Lr		
BMG18002			NIZATI		AL B	EHAV	IOR		ET					
DNIG10002	-		BES18ET						T	У		0.10	0.10	
			dge such		tatist	ical Te	chnique	es			3	0/0	0/0	3
L : Lecture T			y Theory Project (		adite									
OBJECTIVE		u I.J		. CI	cuits									
		re is ai	imed at a	addre	ecino	the c	ontemn	orary	iccue	e wł	ich fall	l under t	he broad	title of
			l its funct		-	, the e	ontemp	orary	issue	5, WI		i unuer t		the of
	-					alyze th	ne beha	vior of	indi	vidua	ls with	in an org	anization	and the
			g with oth									0		
		-		-	_									
COURSE OU	UTCOM	IES (CO	<b>Os</b> ):											
CO1		Effec	tive leade	ershij	p skil	ls								
CO2		Acco	mmodatii	ng w	ith co	o worke	ers and	at Woi	k en	viron	nent			
CO3			nced lead											
CO4			•	; and	l imp	lement	ing go	od pol	icies	for	the wel	fare of 1	nanagem	ent and
	~ .	worke					<u> </u>		<u> </u>			~ • • •	<u> </u>	
Mapping of ( (PSOs)	Course (	Jutcom	ies (COs)	) wit	h Pro	ogram	Outcon	nes (P	Os) (	& Pr	ogram	Specific	Outcome	es
COs/POs	PO1	PO2	PO3	Р	04	РО	PO6	PO7	/ P	PO8	PO9	PO10	PO11	PO12
<u>CO1</u>						5			_					
CO1	H		M			Μ		L			M		L	
CO2	Μ	Μ					M			H	Μ	Μ	L	H
CO3	L		H	]	H	Μ		M		H	Μ	L	M	
CO4	Μ	L					Μ				Μ			Μ
H/M/L indica	ates Stre	ength of		ation	H	High,	M-Me	edium	, L-L	/OW			I	
			ces						Π					
			ien						Skill					
			Sc											
		~	ial						mic		ė			
		<b>3</b> 5	$\sim$						5		2			
Ś		nce	Soc		SS		ţ		-e		en			
gory	S	Science	nd Soc		tives	Sć	iject		/ Teo		Scien			
Category	nces	ig Science	s and Soc	ore	llectives	tives	Project		iips / Teo		ent Scien			
Category	sciences	ering Science	itties and Soc	n Core	n Electives	lectives	al / Project		mships / Teo	sllis	ement Scien			
Category	ic Sciences	ineering Science	nanities and Soc	gram Core	gram Electives	n Electives	stical / Project		nternships / Tec	t Skills	nagement Scien			
Category	Basic Sciences	Ingineering Science	Humanities and Soc	Program Core	Program Electives	<b>Dpen</b> Electives	Practical / Project		Internships / Technical	Soft Skills	Management Scien			
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project		Internships / Tec	Soft Skills	<ul> <li>▲ Management Science</li> </ul>			



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BMG18002	MANAGEMENT CONCEPTS AND ORGANIZATIONAL BEHAVIOR	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- This course is aimed at addressing the contemporary issues, which fall under the broad title of management, and its functions.
- There will also be an attempt to analyze the behavior of individuals within an organization and the issues of working with other group or teams.

#### UNIT I INTRODUCTION TO MANAGEMENT

 $\begin{array}{l} \text{Definition of Management}-\text{Science or Art or Profession}-\text{Manager}\ v_s\ \text{Entrepreneur vs}\ \text{Leader}-\text{Types}\\ \text{of Managers}-\text{Managerial roles and skills}-\text{Evolution of Management}-\text{Scientific, Human relations and}\\ \text{system approaches} \end{array}$ 

#### UNIT II PLANNING AND ORGANIZING

Nature and purpose of planning – planning process – types of planning – planning premises – Nature and purpose of organizing – Formal and Informal organization – organization chart – organization structure – types - Line and staff authority

#### UNIT III DIRECTING AND CONTROLLING

Leadership – Types and theories of leadership – communication – process of communication – barriers in communication – System and process of controlling – Budgetary and non budgetary control techniques – Direct and preventive control – reporting

### UNIT IV INDIVIDUAL BEHAVIOR

Diversity - Attitudes and Job satisfaction – Emotions and Moods – personality and values – perception – Decision making – Motivation concepts – Motivation Applications

#### UNIT V GROUP BEHAVIOR

Foundations of Group Behavior – Understanding Teams – power and politics – Conflict and Negotiation – Stress Management

#### **TEXT BOOKS:**

- 1. Harold Koontz and Heinz Weihrich "Essentials of Management" Tata McGraw Hill Education 2015
- 2. Stephen. P. Robbins, Timothy A. Judge and Seema Sanghi "Essentials of *Organizational Behavior*" Pearson 10th Edition 2010

#### **REFERENCE BOOKS:**

- 1. Tripathi PC & Reddy PN "Priciples of Management" Tata McGraw Hill 2012
- 2. Stephen P. Robbins, David A.De.Cenzo, Mary Coulter "Fundamentals of Management" Pearson Education 2016

# 9 Hrs

9 Hrs

9 Hrs

## 9 Hrs

9 Hrs

### Total Hours: 45



Subject Code	· S1	ubject N	ame ·		2010	Regula			Ty/	L	Т	/ <b>P/</b> ]	R C
BIT18ET1		•	LE APPI	ICAT	ION DE	EVELO	PMEN	Т	Lb/	L	S.I		
									ET				
									L				
	Pı	ereauisi	te: BCS1	8ET2					ETL	1	0/	1 3/0	) 3
L : Lecture T		_			Learnin	g P:P	roject H			C: Cre			, ,
Ty/Lb/ETL :	Theor	y/Lab/Ei	mbedded	Theory	and La	ıb							
OBJECTIV													
			ions and		-	-							
		nd apply plication		erent ty	pes of	applica	tion mo	odels/a	rchitec	tures	used t	o develo	op mobile
	-	<b>•</b>	nents an	d struct	ure of a	mobile	develo	pment	framev	vorks			
		r -						r					
COURSE O		MES (	$\overline{\mathbf{O}}_{\mathbf{a}}$	2 5)									
COURSE O		,	inderstan	,	arious N	<i>I</i> obile I	Platform	ne and a	nalvze	ite at	chitect	tures	
CO2			design ar						•				
CO3			develop o		-			piiouii		- mar		* 1 <b>1</b> pp10	
Mapping of			-										
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO	)	PO	PO11	PO12
											10		
CO1	Н	L	L	Μ	Μ	L	Μ	L	L		Η	L	L
CO2	Μ	Η	Η	Μ	Н	L	L	Μ	Μ		Μ	Μ	Η
CO3	Μ	Н	Η	Μ	Н	L	L	Μ	Η		Μ	Н	Η
COs /	P	501	PS	02	PS	03	PS	<b>SO4</b>		PSO	5	Р	SO6
PSOs													
CO1		L	I			H		L		Η			Μ
CO2		Μ	H			Ĺ		М		Μ			H
CO3		H	E			Ĺ		H		Μ			H
H/M/L indic	ates S	trength	of Corre	elation	H- Hi	gh, M-	Mediu	m, L-I	<b>JOW</b>				
								ili					
								l Sk					
		s	ial					nica					
ſŊ		nce	Social		s		L.	echi					
Category	S	Scie		0	tive	S	jjec	/ T(			lve		
Cat	ence	ng	es a	Core	Elec	ctive	Pro/	nips	s		lecti		
	Sci	eeri	uniti ces	am	am	Ele	cal ,	Internships / Technical Skill	kill		al E		
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Inte	Soft Skills		Special Elective		
	Bź	Ē	H _i Sc	Pr	Pr	0 ¹	Pr		Š		► Sp		
											V		1



**2018 Regulation** 

Subject Code :	Subject Name :	Ty/ Lb/	L	T/ S.Lr	P/R	С
BIT18ET1	MOBILE APPLICATION	ETL				
DIIIOEII	DEVELOPMENT	ETL	1	0/1	3/0	3

#### **OBJECTIVES:**

- Describe the limitations and challenges of working in a mobile and wireless environment
- Describe and apply the different types of application models/architectures used to develop mobile software applications.
- Describe the components and structure of a mobile development frameworks

#### UNIT I **INTRODUCTION**

Introduction to Mobile Platforms - Exploring Android Platform - Android Studio, Java, XML - Exploring Apple IPhone Platform – XCode, Objective C, Swift – Options for development

#### **UNIT II USER INTERFACE (UI) DEVELOPMENT FOR MOBILE APPS**

UI Elements - User Interface Frameworks - Layouts - Gesture based interfaces - Applying Styles & Themes – Adding Settings

#### UNIT III **GOOGLE ANDRIOD PLATFORM**

Google Application Architecture - Basic Building Blocks - The Android Emulator - Event based programming - SQLite Database Access - ADB - Location based Services

#### **UNIT IV APPLE IPHONE PLATFORM**

UI Kit for Interfaces - Event Handling and Graphics Services - SQLite Database Access - Application Debugging – Location Handling

#### **IMPLEMENTING SOFTWARE AS A SERVICE** UNIT V

Service Oriented Computing Examples - Google Maps - Enabling Map based services in Application -Amazon Web Services – Exploring AWS S3 & AWS IoT APIs

#### **TEXT BOOKS:**

- 1. Ed Burnette (2015) Hello, Android: Introducing Google's Mobile Development Platform, 4th edition, Pragmatic Bookshelf.
- 2. Marko Gargenta (2011) Learning Android, O'Reilly Media.

#### **REFERENCE BOOKS:**

- 1. Richard Rodger (2012) Beginning Mobile application development in the cloud, Wrox Publication.
- 2. Jonathan A. Zdziarski (2008), iPhone Open Application Development, 2nd edition, O'Reilly Media Publication.

# 9 Hrs

9 Hrs

9 Hrs

9 Hrs

## 9 Hrs

## **Total No. of Hrs: 45**



				2018	Regula	tion						
	-			NDEI				Ty/ Lb/ ET	L	T/ S.L r	P/R	C
C	LOUD	APPLI	CATIO	ON DEV	ELOP	MENT	LAB	Ľ				
Pre	erequisi	te: Nil						Lb	0	0/0	3/0	1
					ng P:P	roject	R : Rese	arch C:	Credits			
•			•									
				rious cl	loud Te	chnolog	ду					
UTCO	,	, ,	,									
							<u> </u>					
						•						
	Ι	Deploy a	nd perfo	orm clo	ud appl	ications	5					
Course	Outco	mes with	n Progr	am Ou	tcomes	(POs)						
<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	) PC	011	PO12
Μ	Н	Н	Μ	Н	Μ	М	М	Н	Μ	I	I	Н
Н	Μ	Н	Н	Н	Μ	Н	Н	Μ	Н	Ν	Л	Н
Η	Н	Μ	Μ	Н	Μ	Μ	Μ	Н	Μ	I	I	Μ
PS	01	PSC	02	PS	03	PS	604	PS	05		PSC	)6
I	I	H	[	Ν	Л	I	H	Ι	N		Μ	
Ν	1	Μ	[	I	I	Ν	M	]	H		Н	
									H		Μ	
ates St	rength	of Corre	elation	H-H	igh, M-	Mediu	ım, L-L	ow	1			
c Sciences	ineering Sciences	nanities and Social Sciences	gram Core	gram Electives	en Electives	ctical / Project	Internships / Technical Skill	t Skills				
	Su Su Pre : Tuton eory/L E : To UTCO UTCO OUTSE PO1 M H H H H H H H H H H	Subject Na CLOUD Prerequisi : Tutorial S. eory/Lab/Emb E : To learn an UTCOMES (0 1 UTCOMES (0 1 1 1 1 1 1 1 1 1 1 1 1 1	Subject Name :CLOUD APPLIOPrerequisite: Nil: Tutorial S.Lr : Superent Sup	Subject Name : CLOUD APPLICATIO Prerequisite: Nil : Tutorial S.Lr : Supervised acory/Lab/Embedded Theory and E : To learn and implement van UTCOMES (COS) : (3-5) Create the applic Implement secur Deploy and perfor Course Outcomes with Progr PO1 PO2 PO3 PO4 M H H M H M H H M H H M H M M H M H	Subject Name :         CLOUD APPLICATION DEV         Prerequisite: Nil         : Tutorial S.Lr : Supervised Learningeory/Lab/Embedded Theory and Lab         E : To learn and implement various cl         Create the application of Implement security in cl         OTCOMES (COS) : (3-5)         Create the application of Implement security in cl         Deploy and perform cloor         Course Outcomes with Program Outor         PO1       PO2       PO3       PO4       PO5         M       H       H       H       H         H       M       H       H       H         PSO1       PSO2       PS       PS         H       M       M       H       H         M       M       H       H       H         H       M       H       H       H         H       M       H       H       H         H       M       H       H       H         H       M       H       H       H       H         H       M       H       H       H       H       H       H       H       H       H       H       H	Subject Name :       Subject Name ::       Subject Name ::	Subject Name :       CLOUD APPLICATION DEVELOPMENT         Prerequisite: Nil       :         : Tutorial S.Lr : Supervised Learning P : Project is earry/Lab/Embedded Theory and Lab         2: To learn and implement various cloud Technolog         UTCOMES (COs) : (3-5)         Create the application of cloud Technol         Implement security in cloud applications         Deploy and perform cloud applications         Course Outcomes with Program Outcomes (POS)         PO1       PO2       PO3       PO4       PO5       PO6       PO7         M       H       H       M       M       M         H       M       M       M       M         PS01       PS02       PS03       PS       PS         H       M       M       M       M       M         M       M       M       M       M       M         M       M       M       M       M       M         H       M       M       M       M       M         M       M       M       M       M       M         M       M       M       M       M       M         H       M       M       M       M <td>Subject Name :       CLOUD APPLICATION DEVELOPMENT LAB         Prerequisite: Nil       :         : Tutorial S.Lr : Supervised Learning P : Project R : Reservery/Lab/Embedded Theory and Lab         E : To learn and implement various cloud Technology         UTCOMES (COs) : (3-5)         Create the application of cloud Technology         Implement security in cloud applications         Deploy and perform cloud applications         Ourse Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8         M       H       H       M       M       M         H       M       H       M       M       M         M       H       M       H       M       M         M       M       H       M       M       M         M       M       H       M       M       M         M       M       H       M       M       M         M       M       H       M       M       M       M         M       H       M       H       M       M       M       M         M       M       H       M       M       M<!--</td--><td>$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$</td><td>$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$</td><td>$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$</td><td>Subject Name :       Ty/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/</td></td>	Subject Name :       CLOUD APPLICATION DEVELOPMENT LAB         Prerequisite: Nil       :         : Tutorial S.Lr : Supervised Learning P : Project R : Reservery/Lab/Embedded Theory and Lab         E : To learn and implement various cloud Technology         UTCOMES (COs) : (3-5)         Create the application of cloud Technology         Implement security in cloud applications         Deploy and perform cloud applications         Ourse Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8         M       H       H       M       M       M         H       M       H       M       M       M         M       H       M       H       M       M         M       M       H       M       M       M         M       M       H       M       M       M         M       M       H       M       M       M         M       M       H       M       M       M       M         M       H       M       H       M       M       M       M         M       M       H       M       M       M </td <td>$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$</td> <td>$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$</td> <td>$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$</td> <td>Subject Name :       Ty/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/</td>	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Subject Name :       Ty/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/Lb/



Subject Code	Subject Name	Ty/ Lb/	L	T/ S.Lr	P/R	С
BIT18L05	CLOUD APPLICATION DEVELOPMENT LAB	Lb	0	0/0	3/0	1

#### **OBJECTIVE:**

• To learn and implement various cloud Technology

#### **List of Experiments**

- 1. Creating an application using Hadoop Map/Reduce (Ex: Word Count)
- 2. Creating an application on Amazon EC2
- 3. Creating an application on Windows Azure
- 4. Creating an application on Hadoop
- 5. Creating an application on Google App Engine
- 6. Creating an application on Google Apps Business solutions
- 7. Creating an application on control panel software manager and hypervisor
- 8. Creating a Warehouse Application in SalesForce.com
- 9. Case Study: PAAS(Facebook, Google App Engine)
- 10. Case Study: Amazon Web Services.

#### **COURSE OUTCOME:**

Students will be able to

- create the application of cloud Technology
- implement security in cloud applications
- Deploy and perform cloud applications.



**2018 Regulation** Subject Code: Subject Name : Ty/ L **T**/ P/R С SCRIPTING LANGUAGES LAB **BIT18L06** Lb/ S.L ET r L Prerequisite: BCS17ET3 Lb 0/0 3/0 0 1 L: Lecture T: Tutorial S.Lr: Supervised Learning P: Project R: Research C: Credits Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab **OBJECTIVES :** To learn the basic of JavaScript, Perl & Python • To develop web application using JavaScript &Perl To learn and get the server information and visitor page information using Perl . To learn error and exception handling in Python • To have knowledge get system information using Python To learn and develop web application using Python and MySQL • COURSE OUTCOMES (COs) : (3-5) CO1 Able to design web application using JavaScript, Perl & Python CO₂ Design the web sites using database and scripting languages based upon recent technology CO3 Using Python Scripting languages they will get system details Mapping of Course Outcomes with Program Outcomes (POs) **COs/POs PO2 PO7 PO1 PO3 PO4 PO5 PO6 PO8 PO9 PO1 PO11 PO12** 0 **CO1** Η Η L Η Μ L L Н Η Μ Μ Η **CO2** Η Н Н Μ Μ Η Μ L Н Н Н Μ **CO3** H Η L Η Η Μ Η Μ Μ Μ Н Μ COs/ PSO1 PSO2 PSO3 PSO4 PSO5 PSO6 **PSOs CO1** Η Η Н L Н Η **CO2** Н Η L Η Н Η **CO3** Н Н L Η Н Η H/M/L indicates Strength of Correlation H- High, M- Medium, L-Low Internships / Technical Skill Social **Engineering Sciences** Category Program Electives Practical / Project Humanities and **Open** Electives **Basic Sciences** Program Core Soft Skills Sciences



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18L06	SCRIPTING LANGUAGES LAB	Lb	0	0/0	3/0	1

#### **OBJECTIVES:**

- To learn the basic of JavaScript, Perl & Python
- To develop web application using JavaScript &Perl
- To learn and get the server information and visitor page information using Perl
- To learn error and exception handling in Python
- To have knowledge get system information using Python
- To learn and develop web application using Python and MySQL

### JavaScript

- 1. JavaScript program to Perform all Arithmetic Operation
- 2. JavaScript to search an element in an array of size "n".
- 3. JavaScript to compute the GCD of 2 numbers using function.
- 4. JavaScript to illustrate different in-built String Functions.

### Perl

 a) Write a Perl program to display various Server Information like Server Name, Server Software, Server protocol, and CGI Revision etc.
 b) Write a Perl program to accept UNIX command from a HTML form and to display the output of

b) Write a Perl program to accept UNIX command from a HTML form and to display the output of the command executed.

2. a) Write a Perl program to accept the User Name and display a greeting message randomly chosen from a list of 4 greeting messages.

b) Write a Perl program to keep track of the number of visitors visiting the web page and to display this count of visitors, with proper headings.

- 3. Write a Perl program to display a digital clock which displays the current time of the server.
- 4. Write a Perl program to insert name and age information entered by the user into a table created using MySQL and to display the current contents of this table.

### Python

- 1. Write Simple python program with function and it types
- 2. Write a python program to read and write operation with a file.
- 3. Exception handling in python
- 4. Write a Python script with MySQL to create a customer account balance database in a banking process.
- 5. Write a program that displays the following system information from /proc files. a). CPU information, b). Memory Usage Information, c). Interrupt information.
- 6. Write a simple image viewer application using python.



						2018	Regula	ation						
Subject		Su	bject N			DILAC				Ty/	L	T/	P/H	R C
BIT18	LU7			PRO	OJECT	PHAS	SE - I			Lb/		S.L		
										ET L		r		
		Pre	erennisi	te: NIL						L Lb	0	0/0	3/3	3 2
L:Lec	ture T		•	$\frac{10.1012}{\text{Lr} \cdot \text{Supe}}$	ervised	Learnir	ng P:H	Project	R : Res		-		5/2	2
				edded T				rojeet	11.100	curen e	· erea			
OBJE	CTIVE	ES:	The obj	ective of	the Mai	in Proje	ect is to	culmin	ate the	academ	ic stud	y and	provid	e an
				blem or										
				ject dem										
				orld issu								to thin	k criti	cally and
	•					incai u	cersion	s and to	present	enecu	very.			
				COs):(2										
CO1	~ ~ `	-	nowled	ge and sl	cills acq	uired in	n the co	ourse of	study a	ddressi	ng a sp	ecific	proble	m or
CO2	issue To er		na etude	ents to the	ink criti	cally or	nd cross	tivaly of		viatel in	21100.00	d day	lonua	or
002						carry di	iu ciea	uvery di	Jour SOC	10tal 18	sues all		Jop us	U1
		riendly and reachable solutions												
CO3														
CO4	To ta	ke on t	the chal	lenges of	teamw	ork, pr	epare a	present	ation ar	nd demo	onstrate	e the 1r	nate ta	ilents.
				mes wit										
COs/P	Os	PO1	PO2	PO3	PO4	PO	PO6	PO7	PO8	PO9	PO	10   F	PO11	PO12
<u>CO1</u>		TT	TT	TT	TT	5	TT	TT	T	М	M	T	T	TT
CO1 CO2		H H	H H	H H	H H	M H	H H	H H	L M	M M	M M	H H		H H
CO2 CO3		H	H	H	H	H	H	H	M	M	H	I		M
CO4		H	M	H	H	H	H	M	H	H	H	I		H
COs /			01	PS			503		<b>504</b>	PSO				
PSOs														
<b>CO1</b>														
CO2														
H/M/L	indica	ates St	rength	of Corre	elation	H-H	igh, M	- Mediu	ım, L-I	LOW				
									ill					
									l Sk					
			s	ial					lica					
			nce	Social		ŝ		L.	chr					
ry		S	cie	pr		tive	SS	ojec	/ Te					
Category		nce	Jg S	is al	Core	Ilec	tive	Prc	, sqi					
Cat		Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
_		sic ?	gine	Humanit Sciences	gra	gra	en I	ctic	nter	î Si				
		Bat	Εn{	Hu. Sci	Pro		Op	Pra	Ir	Sof				
									[					
								$\checkmark$						
														ı <u> </u>



Subject Code	Subject Name	Ty/ Lb/ FTI	L	T/ S.Lr	P/R	С
BIT18L07	PROJECT PHASE – I	Lb	0	0/0	3/3	2

#### **OBJECTIVES:**

• The objective of the Main Project is to culminate the academic study and provide an opportunity to explore a problem or issue, address through focused and applied research under the direction of a faculty mentor. The project demonstrates the student's ability to synthesize and apply the knowledge and skills acquired to real-world issues and problems. This project affirms the students to think critically and creatively, find an optimal solution, make ethical decisions and to present effectively.

B.Tech CSE Project carries 12 credits of which , Phase I carries 2 credit. In Phase I ,Students are expected to

- (i) Identify a Problem.
- (ii) Have the feasibility explored.
- (iii) Freeze the Requirement specification (both user and system).
- (iv) Construct the architectural model (as many as required).
- (v) Design the solution.
- (vi) If possible publish the Feasibilty study as a survey paper



Subject Code BHS18FLX	: Su	bject Na FOR	ame : EIGN L	ANGU	AGE (l	EVALU	J <b>ATIO</b>	N)	Ty/ Lb/ ET L	L	T/ S.L r	P/R	C
	Pr	erequis	ite: NIL						Lb	0	0/0	3/3	2
L : Lecture T T/L/ETL : Th						g P:P	roject l	R : Rese	arch C: (	Credits			
<b>OBJECTIV</b> communicate speakers of th	e effecti	vely in											ive
COURSE O	UTCO	MES (O	COs): (	3- 5)									
CO1	Achie	eve func	tional pr	oficiend	cy in lis	tening,	speakin	ng, readi	ng, and v	writing.			
CO2		Develop an insight into the nature of language itself, the process of language and culture acquisition.											e
CO3	Deco	Decode, analyze, and interpret authentic texts of different genres.											
11 0		ourse Outcomes with Program Outcomes (POs)											
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	) PO	011	PO12
CO1	L	L	L	L	L	Н	L	H	Μ	Н	Н	]	Ĺ
CO2	Μ	L	L	L	L	Η	L	Η	Η	Н	Η		L
CO3	L	L	Μ	Μ	L	Η	Μ	H	Μ	Н	Η	]	Ĺ
COs / PSOs	PS	01	PS	02	PS	03	PS	504	PSO5				
CO1													
CO2													
H/M/L indic	ates St	rength	of Corre	elation	H- Hi	gh, M-	Mediu	m, L-L	DW	_			
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
			~										



#### DEPARTMENT OF INFORMATION TECHNOLOGY 2018 Regulation SEMESTER – VIII

Subject Code BIT18005	e: Su	bject N WIR	ame : RELESS	COMN	IUNIC	ATION	N	Ty/ Lb/ ETL	L	4	T/ S.Lr	P/R	C
	Pro	erequisi	te: BEC	7I01				Ту	3	;	0/0	0/3	4
L : Lecture T T/L/ETL : T			·			ng P:F	Project	R : Rese	arch	C: Ci	redits		
OBJECTIV			• 1 .										
			ireless tr knowled			e netwo	ork lave	r					
			exploit s	0			SIR Iuye	1					
	• Тој	perform	wireless	teleph	ony app	olicatior	18						
COURSE O	UTCO	MES (	C <b>Os</b> ):(	3- 5)									
CO1			nd the ap										
CO2		Recognize the Telecommunication and satellite systems											
CO3	D	Design the Wireless LAN and Mobile network layer											
Mapping of	Course	e Outco	mes wit	h Prog	ram Ou	itcomes	s (POs)						
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P O 9	Р	010	PO11	PO12
CO1	Н	Μ	Μ	Н	Н	Μ	Μ	Μ	H		М	Н	Η
CO2	H	H	Μ	Η	Μ	Μ	Μ	Н	Η		H	Μ	Н
CO3	Η	Η	Μ	Н	Н	Μ	Н	М	Η		Μ	Η	Μ
COs / PSOs	PS	01	PSO	02	PS	03	PS	04		PSO	5	PS	06
CO1	J	H	H	[	Ν	Л	J	H		Μ		I	А
CO2	N	ſ	N	[	I	H	N	ſ		Η		]	H
CO3	]	H	H	[	I	Η	]	H		Μ		Ν	Л
H/M/L indic	cates St	rength	of Corre	elation	н. н	ioh M.	Madia						
		I			11-11	igii, wi	- Mean	ım, L-L	OW			1	
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	▲ Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill <b>, </b>	Soft Skills				



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
BIT18005	WIRELESS COMMUNICATION	Ту	3	0/0	0/3	4

#### **OBJECTIVES:**

- To learn Wireless transmission .
- To acquire knowledge about mobile network layer •
- To test and exploit support of mobility
- To perform wireless telephony applications

#### UNIT I **INTRODUCTION & WIRELESS TRANSMISSION**

Introduction - Applications - vehicles - emergencies - replacement of wired networks - history of wireless communications - market for mobile communication - simplified reference model - wireless transmission - frequencies for radio transmission - signals - antennas - signal propagation - multiplexing - modulation - spread spectrum - cellular system.

#### UNIT II MAC AND TELECOMMUNICATION SYSTEM

Motivation of specialized MAC - SDMA - FDMA - TDMA - Classical Aloha - PRMA packet reservation multiple access - polling - CDMA - comparison - Telecommunication - GSM - Mobile services - protocols - DECT - TETRA - UMTS and IMT2000 - UMTS system architecture - UMTS radio interface - UTRAN - core network - handover.

#### SATELLITE SYSTEM AND BROADCAST SYSTEMS UNIT III

Satellite system history - application - basics - GEO - LEO - MEO - Routing - localization - handover broadcast systems – cyclical repetition of data – digital audio broadcasting – digital video broadcasting – convergence of broadcasting and mobile communications.

#### **UNIT IV** WIRELESS LAN AND MOBILE NETWORK LAYER

Intra red Vs radio transmission - Infrastructure and ad-hoc network - IEEE 802.11 - HIPERLAN -Bluetooth - radio layer - Ling manager protocol - L2CAP - security - SDP - profiles - IEEE 802.15 mobile IP - IP packet delivery - Agent discovery - registration - tunnelling and encapsulation optimization - IPv6 - DHCP - mobile ad-hoc networks - ad-hoc routing protocols.

#### **UNIT V** MOBILE TRANSPORT LAYER AND SUPPORT FOR MOBILITY 12Hrs

Traditional TCP - congestion control - classical TCP improvements - TCP over 2.5/3G wireless networks - performance enhancing proxies - Support for mobility - file systems - world wide web - wireless application protocols – WML Script – Hnode – SyncML – architecture of future networks.

#### **TEXT BOOKS:**

- 1. Jochen Schiller Mobile communcications" 2nd Edition Pearson 2011
- 2. Rappaport "Wireless communications principle and practice" 2nd Edition 2010

#### **REFERENCE BOOKS:**

- 1. Rajkamal "Mobile computing" Oxford 2011
- 2. Prasant kumar pattnaik "Fundamentals of Mobile computing" 2nd Edition PHI 2015

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

### 12Hrs

12Hrs

12Hrs

#### 12Hrs

**Total Hours: 60** 



2018 Regulation

						2018	Regula	<u>ation</u>					
Subject BIT1	t Code 1 <b>8L08</b>		Subject N		JECT P	HASE -	II		Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
		P	Prerequis	ite: BIT	17L10				Lb	0	0/0	12/12	8
			orial S Lab/Eml				g P:Pr	oject R	: Resear	ch C: C	credits		
			U U								study and	•	
a facult skills a	y mei cquire	ntor. T ed to re	he proje eal-world	ct demo d issues	nstrates and proł	the stude plems. T	ent's abi his proje	lity to sy ect affiri	ynthesize	and ap idents	earch undo pply the kn to think cr y.	owledge	and
COUR	SE O	UTC	OMES (	<b>COs</b> ) : (	(3-5)								
CO1	App	ly the	knowled	lge and s	skills ac	quired in	the cou	irse of st	tudy addı	ressing	a specific	problem	or issue.
CO2			age stud able solu		hink crit	ically an	d creati	vely abo	out societ	al issue	es and deve	elop user	friendly
CO3	To r	efine 1	research	skills an	d demo	nstrate th	neir prof	ficiency	in comm	unicati	on skills.		
CO4	To t	ake or	n the cha	llenges o	of teamv	vork, pre	epare a p	oresentat	ion and o	lemons	trate the in	nnate tale	nts.
Mappi	ng of	Cours	se Outco	omes wi	th Prog	ram Ou	tcomes	(POs)					
COs/P	Os	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO10	PO11	PO12
CO1		Η	CO1	Н	CO1	н	CO1	H	CO1	Н	CO1	H	CO1
CO2		H	CO2	Н	CO2	Н	CO2	Н	CO2	H	CO2	Н	CO2
CO3		H	CO3	Н	CO3	Н	CO3	Н	CO3	Н	CO3	Н	CO3
CO4		H	CO4	Н	CO4	Н	CO4	Н	CO4	Н	CO4	Н	CO4
COs / PSOs		PS	501	PS	02	PS	03	PS	504	PS O5			
CO1													
CO2	• 1•	4 6	N4 41	6.0	1.4		1 14		<b>T T</b>				
H/M/L	mai	cates S	strengtn	OI COL		H- HI	gn, M-		n, L-Low	/			
Category		Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			
								$\checkmark$					



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18L08	PROJECT (PHASE – II)	Lb	0	0/0	12/12	8

#### **OBJCETIVES:**

The objective of the Main Project is to culminate the academic study and provide an opportunity to explore a problem or issue, address through focused and applied research under the direction of a faculty mentor. The project demonstrates the student's ability to synthesize and apply the knowledge and skills acquired to real-world issues and problems. This project affirms the students to think critically and creatively, find an optimal solution, make ethical decisions and to present effectively.

Students are expected to carry out the following :

- (i) Implement the Design using suitable technologies.
- (ii) Generate the test cases.
- (iii) Demonstrate the solution with suitable user interface.
- (iv) Prepare a project report consolidating the phase-I and II activities.



# DEPARTMENT OF INFORMATION TECHNOLOGY 2018 Regulation 5th SEMESTER ELECTIVES E- I (Common to CSE&IT)

Subject Code BCS18E01	e: Su	bject N	ame : IMAGE	PROC	ESSIN	G		Ty/ Lb/ ET L	L	T/ S.Lr	P/R	С
	Pre	erequisi	te: BCS1	8ET1				Ту	3	0/0	0/0	3
L : Lecture T							roject	R : Res	earch C	C: Credits	I	
Ty/Lb/ETL :	•	/Lab/E	mbedded	Theory	and La	ab						
OBJECTIV												
		-					l transf	orms n	ecessar	y for imag	e proce	ssing.
		•	enhance toration		-	es						
		•	compres			25						
		•	segment	-			on tech	niques.				
		ç	ç									
COURSE O												
CO1 CO2		-	al image enhance			ration t	ochnia	100				
CO2 CO3	•											
CO4		image compression and segmentation techniques present features of images										
Mapping of	-			•		tcomes	(POs)					
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO	PO	PO12
										10	11	
CO1	H	L	Μ	Μ	Μ	L	Μ	L	Μ	Μ	Μ	L
CO2	Н	Η	Н	Н	Η	L	Μ	L	Μ	Μ	Н	Μ
CO3	Н	Η	Н	Η	Η	Μ	Μ	L	Η	Μ	Н	Μ
CO4	Μ	Μ	Μ	L	Μ	Μ	Μ	Μ	L	Μ	Μ	Μ
COs /	PS	01	PSC	02	PS	03	PS	<b>504</b>	I	PSO5		PSO6
PSOs												
CO1		<u>I</u>	M			<u>/</u>		M		M		M
CO2		H	H		I			H		H		H
CO3		<u>И</u> И	H H			<u>/I</u>		H M		H M		H M
CO4 H/M/L indic										IVI		IVI
		length			11-11		wieun	, 1./				
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			
					~							



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E01	IMAGE PROCESSING	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To Lean the image fundamentals and mathematical transforms necessary for image processing. •
- To Learn the image enhancement techniques
- To Learn image restoration procedures.
- To Learn the image compression procedures. •
- To Learn the image segmentation and representation techniques

#### UNIT I **INTRODUCTION**

Digital image representation-Fundamental steps in image processing -Elements of digital image processing systems, Digital Image Fundamentals - :Elements of visual perception-A simple image model -Sampling and quantalization -Some basic relationship between pixels-Imaging geometry -Photographic film.

#### UNIT II **IMAGE TRANSFORMS**

Introduction to the Fourier transform -The Discrete Fourier transform -Some properties of the two dimensional Fourier transform -The fast Fourier transform-Other seperable image transforms-The hotelling transform.

#### UNIT III **IMAGE ENHANCEMENT**

Background -Enhancement by point Processing -Spatial filtering-Enhancement in the frequency domains -Generations of the spatial masks from frequency Domain specifications- Color image processing -Image Restoration: Degradation Model -diagonalization of Circulant and Block circulant Matrices -Algebraic approach to restoration-Inverse filtering -Least mean square filter -constrained least square restoration-Restoration in spatial domain-Geometric transformation.

#### **IMAGE COMPRESSION UNIT IV**

Fundamentals -image Compression models -Elements of information Theory - Error-free Compression -Lossy Compression - Image Compression standards, Images Segmentation : Edge linking and boundary detection - Thresholding - Region - Oriented segmentation - The use of motion in segmentation.

#### **REPRESENTATION AND DESCRIPTION** UNIT V

Representation Schemes - Boundary descriptors - Morphology - Relational descriptors, Recognition and Interpretation: Elements of image Analylsis - Pattern and pattern classes - Decision theoretic methods -Structural Methods - Interpretation.

#### **TEXT BOOKS:**

- 1. RAFAEL C.GONZALEZ and RICHARD E.WOODS. Digital Image Processing 2009, Prentice Hall.
- 2. Jayaraman, S. Esakkirajan and T. Veerakumar, Digital Image Processing Tata McGraw Hill, 2009

#### **REFERENCE BOOKS:**

- 1. M.A.SID AHMAED, Image Processing Theory, Algorithm and Architecture McGraw Hill, 1995
- 2. DON PEARSON, Image Processing, McGraw Hill, 1991.

#### **Total Hours: 45**

## B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

### 9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs



RAPHICA SYST	Subject Name :		gulatio									
GEOGRAPHICAL INFORMATION SYSTEMS       Lb/ ETL       S.Lr         Prerequisite: NIL       Ty       3       0/0       0/0         orial       S.Lr : Supervised Learning P : Project R : Research C: Credits												
NIL	Prerequisite: NII					Ту	3	0/0	0/0	3		
	utorial S.Lr : Superveory/Lab/Embedded T		P : Proje	ect R:	Researc	ch C: Ci	edit	8				
oding tech	: students will be able t create a new geo cod y.	-	-			•			real tin	ne case		
	COMES (COs) : ( 3-											
	To design, exp	•		alyze G	IS mod	els						
Create a new geo coding technique												
Apply the learnt GIS modeling for a real time case study												
se Outcomes with Program Outcomes (POs)												
PO3 PO4	PO1 PO2 PO3	PO5	PO6	PO7	PO8	PO9	PO	10	PO11	PO12		
H H	H H H	Μ	Н	М	Μ	М	I	H	Н	Н		
H M	H H H	Μ	Н	Μ	Μ	L	N	Л	Μ	L		
M M	H H M	Μ	Н	Н	Н	Н	I	H	Μ	Μ		
h Program	urse Outcomes with	Specifi	ic Outc	omes (	PSOs)							
PSO2	PSO1 I	PS	03	PS	04	P	SO5		PS	06		
Н	Н	N	1	N	1		Η		ŀ	I		
Н	Н	Ι		N	1		H		ł	I		
Μ	Н		1	N			H		N	1		
elation H	s Strength of Correla	- High,	M- Me	edium,	L-Low	7						
<del>D</del>	Basic Sciences Engineering Sciences Humanities and Social Sciences	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills						
	Basic Sciend Engineering	Program Core	Program Co	Program Co	Program Co Program Ele Open Electi Practical / P	Program Co Program Ele Open Electi Practical / P	Program Co Program Ele Open Electi Practical / P Internsh Soft Skills	Program Co Program Ele Open Electi Practical / P Internsh Soft Skills	Program Co Program Ele Open Electi Practical / P Internsh Soft Skills	Program Co Program Ele Practical / P Soft Skills		



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E02	GEOGRAPHICAL INFORMATION SYSTEMS	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

UNIT I

- The students will be able to design, explore, interpolate and analyze GIS models
- To create a new geo coding technique and apply the learnt GIS modeling for a real time case study

#### **BASIC CONCEPTS**

Introduction - Coordinate Systems - Vector Data Model - Raster Data Model.

#### UNIT II **DATA ACOUISTION & MANIPULATION**

GIS Data Acquisition - Geometric Transformation - Spatial Data Editing - Attribute Data Input and Management - Data Display and Cartography.

#### **UNIT III DATA ANALYSIS**

Data Exploration - Vector Data Analysis - Raster Data Analysis - Terrain Mapping and Analysis -Viewsheds and Watersheds.

#### **UNIT IV INTERPOLATION & APPLICATIONS**

Spatial Interpolation - Geocoding and Dynamic Segmentation - Path Analysis and Network Applications.

#### UNIT V MODELLING

GIS Model and Modelling.

## **TEXT BOOK:**

Kang-tsung Chang (2015), Introduction to Geographic Information Systems, 1.

(8th ed.), Mcgrawhill ISBN 0078095131, 9780078095139

#### **REFERENCE BOOKS:**

- 1. Prithvish Nag And Smita Sengupta, Introduction To Geographical Information Systems, Concept Publishing Company, 2007, ISBN 8180694399, 9788180694394
- 2. Paul Longley, Geographical information systems, 2/e, Wiley, 1999, Digitised 2007, ISBN -0471321826, 9780471321828

#### 9 Hrs

**Total Hours: 45** 

9 Hrs

#### 9 Hrs

9 Hrs

9 Hrs



2018 Regulation

	<u> </u>				2010	Regula	auon		1		T .	
Subject Code	e: Si	ubject Na				10		Ty/	L	Τ/	P/R	С
DCC10E03			DATA	BASE	TUNIN	IG		Lb/		S.Lr		
BCS18E03								ETL				
			te: BCS1					Ту	3	0/0	0/0	3
L : Lecture T							roject l	R : Resea	arch C:	Credits		
Ty/Lb/ETL :	Theor	y/Lab/Ei	mbedded	Theory	and La	ıb						
OBJECTIV	ES :											
		ts will be	e able to t	une the	e databa	ses for	differen	it data ba	ise appl	ications		
			dies in da									
	-		performa									
	5		1		0 1							
COURSE O	UTCO	) MES ((	COs): (3	<b>3- 5</b> )								
CO1		Able to 7	Fune the	databas	es for d	ifferent	Data ba	ase Appl	ication	s		
CO2			Develop (					11				
CO3		Able to 7	Froublesh	oot the	data ba	ises						
Mapping of	Cours	e Outco	mes with	n Progr	am Ou	tcomes	(POs)					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO10	PO11	PO12
CO1	Н	Н	Μ	Н	Μ	Н	Н	Μ	Н	Н	Н	Μ
CO2	Н	Н	Н	Н	L	Н	Μ	Н	Μ	Н	Н	М
CO3	Μ	H	Н	М	Н	Μ	Н	Н	Μ	Н	H	Н
COs /	P	<b>SO1</b>	PSC	02	PS	03	PS	<b>504</b>	P	SO5	P	506
PSOs												
CO1	H		Μ		Н		Н		Μ		Н	
CO2	H		Н		Н		Μ		H		Μ	
CO3	Н		Н		Μ		Н		Μ		Н	
H/M/L indic	cates S	trength	of Corre	lation	H- Hi	igh, M-	Mediu	m, L-Lo	W			
			es					dill				
			Sciences					I SI				
			Scie					ica				
ý			al S					chn				
30r.		ces	ocií					Те				
Category		ienc	Š		ves		sct	/ SC				
Ũ	ses	Sci	and	e	ctiv	ves	roje	ship				
	enc	ing	es a	Col	Ele	ctiv	$ \mathbf{P_1} $	strus	S			
	Sci	eeri	niti	m	m	Ele	cal	Internships / Technical Skill	kill			
	Basic Sciences	Engineering Sciences	Humanities and Social	Program Core	gre	<b>Dpen</b> Electives	Practical / Project		Soft Skills			
	Ba	En	Hu	Pr(	▲ Program Electives	Op	$\Pr_{\tilde{L}}$		So			
					~							



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E03	DATABASE TUNING	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- The students will be able to tune the databases for different data base applications
- To develop case studies in data bases, and able to troubleshoot the data bases
- Identify the critical performance tuning steps

#### UNIT I Fundamentals of Tuning

Review of Relational Databases – Relational Algebra - Locking and Concurrency Control – Correctness Consideration – Lock Tuning – Logging and the Recovery Subsystem – Principles of Recovery – Tuning the Recovery Subsystem – Operating Systems Considerations – Hardware Tuning

### UNIT II Indexing and Hashing

Types of Queries – Data Structures – B tree – B+ Tree - Hash Structures – Bit Map Indexes – Clustering Indexes – Non Clustering Indexes – Composite Indexes – Hot Tables – Comparison of Indexing and Hashing Techniques

#### UNIT III Query Optimization

Techniques - Tuning Relational Systems – Normalization – Tuning De-normalization – Clustering Two Tables – Aggregate Maintenance – Record Layout – Query Tuning – Triggers – Client Server Mechanisms – Objects, Application Tools and Performance – Tuning the Application Interface – Bulk Loading Data – Accessing Multiple Databases

### UNIT IV Troubleshooting

Query Plan Explainers – Performance Monitors – Event Monitors – Finding – Suspicious Queries – Analyzing a Query's Access Plan – Profiling a Query Execution – DBMS Subsystems

#### UNIT V Case Studies

Transaction Chopping – Time Series Databases – Understanding Access Plans – Configuration Parameters: ORACLE; SQL SERVER; DB2UDB – DISTRIBUTED DATABASE – IMPLEMENTATION.

#### **TOTAL HOURS: 45**

### **TEXT BOOKS:**

- 1. Dennis Shasha and Philippe Bonnet (2005) Database Tuning, Principles, Experiments, and Troubleshooting Techniques, Elsevier
- 2. Thomas Connoly and Carlolyn Begg (2009) Database Systems, A Practical Approach to Design, Implementation and Management, (4th ed.) Pearson Education

#### 9 Hrs

9 Hrs

## 9 Hrs

# 9 Hrs

9 Hrs

# B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values



VE : ow clear u oly the app show the luence of t ow detaile sed on con OUTCON Mastering Familiarit computing Familiarit and Java F	y/Lab/Embe understandi propriate te e ability to c f this topic to ed knowled mponents an <b>MES (COs</b> g the princip ity with the	Superv dded Ti ng of th echnique critically o moder ge of as nd servi c) : (3- ples for technol Java rea ow Web CORBA	vised L heory a neoretic es of in y discu rn tren spects ice orio <b>5</b> ) buildi ogies a alization b servio A reali	earning and La cal con mpleme uss the ds in b of EJB ented a ing soft and sta on of cc ces are zation	g P : P b accepts of entatio key con usiness 3 tech rchitec tware s ndards ompon realize of com	of comp n using ncepts : s comp nology eture. ystems for con ents ind ed in Ja ponent	from ponen EJB in cor uting that a from npone	t based 3 tech npone: and so allow o comp ent mo ng Java CM).	d deve nolog nt bas oftwar develo <u>onent</u> odels a	elopment y. wed develo e enginee opment of s. and servic	opment a ering. f applica	and ations
VE: ow clear u oly the app show the luence of to ow detaile sed on con OUTCOM Mastering Familiarit computing Familiarit and Java H Familiarit	y/Lab/Embe understandi propriate te e ability to c f this topic to ed knowled mponents an <b>MES (COs</b> g the princip ity with the ng. ity with the f ng. ity with the f aty with the f <b>RMI</b> and he ity with the f <b>PO PO</b>	ng of the echnique eritically o mode ge of as nd servi e) : (3- ples for technol Java rea ow Wet CORBA s with F PO 3	heory : heoretic es of in y discu rn tren spects ice orid 5) buildi logies a alization b servid A reali Progra	and La cal com mpleme iss the i iss the i of EJB ented a ing soft and sta on of ca ces are zation <b>m Out</b> <b>PO</b> 5	b acepts of entatio key con usiness 3 tech architec tware s ndards ompon realize of com tcomes PO 6	of comp n using ncepts : s comp nology eture. ystems for com ents ind ed in Ja ponent (POs) PO	from from from from from from cludin va. ss (CC	t based 3 tech npone: and so allow o comp ent mo ng Java CM).	d deve nolog nt bas oftwar develo onent odels a n Bear	elopment y. ed develo opment of s. and servic ns, JSP, S	opment a ering. f applica ce-orient ervlets,	and ations ted EJB, PO1 2
VE : ow clear u oly the app show the luence of t ow detaile sed on con OUTCON Mastering Familiarit computing Familiarit and Java F	understandi ppropriate te e ability to c f this topic to ed knowled mponents an <b>MES (COs</b> g the principity with the ng. ity with the RMI and ho ity with the <b>OUTCOMES</b> <b>PO PO</b>	ng of the chnique ritically o mode ge of as nd servi <b>(3-</b> ples for technol Java rea ow Web CORBA <b>s with P</b> <b>PO</b> <b>3</b>	neoretik es of ir y discu rn tren spects ice orio 5) buildi ogies a alizatio b servie A reali <b>Progra</b> <b>PO</b> 4	cal con mplema iss the ds in b of EJB ented a ing soft and sta on of co ces are zation <b>m Out</b> <b>PO</b> 5	acepts of entatio key con usiness 3 tech architect tware s ndards ompon realized of com tcomes PO 6	n using ncepts s comp nology ture. ystems for cor ents ind ed in Ja ponent (POs)	EJB in cor uting that a from npone cludin va. ss (CC	3 tech npone: and sc allow o comp ent mo ng Java CM).	nolog nt bas oftwar develo onent odels a a Bear	y. eed develo e enginee opment of s. and servic ns, JSP, S	opment a ering. f applica ce-orient ervlets,	and ations ted EJB, PO1 2
ow clear u oly the app show the luence of to ow detaile sed on con <b>OUTCON</b> Mastering Familiarit computing Familiarit and Java H Familiarit	beropriate te e ability to c f this topic to ed knowled mponents an <b>MES (COs</b> g the princip ity with the fig. ity with the RMI and ho ity with the <b>e Outcomes</b> <b>PO PO</b>	cchnique critically o mode ge of as nd servi o) : (3- ples for technol Java rea ow Wet CORBA s with F PO 3	es of in y discu rn tren spects ice orio 5) buildi ogies a alizatio b servio A reali <b>Progra</b> 4	mplema iss the iss the iss the iss the iss the iss in boot of EJB ented a iss is issued and star on of constant of	entatio key colusines: 3 tech rchitec ware s ndards ompon realize of com tomes PO 6	n using ncepts s comp nology ture. ystems for cor ents ind ed in Ja ponent (POs)	EJB in cor uting that a from npone cludin va. ss (CC	3 tech npone: and sc allow o comp ent mo ng Java CM).	nolog nt bas oftwar develo onent odels a a Bear	y. eed develo e enginee opment of s. and servic ns, JSP, S	opment a ering. f applica ce-orient ervlets,	and ations ted EJB, PO1 2
bly the app show the luence of to ow detaile sed on con <b>OUTCON</b> Mastering Familiarit computing Familiarit and Java H Familiarit	beropriate te e ability to c f this topic to ed knowled mponents an <b>MES (COs</b> g the princip ity with the fig. ity with the RMI and ho ity with the <b>e Outcomes</b> <b>PO PO</b>	cchnique critically o mode ge of as nd servi o) : (3- ples for technol Java rea ow Wet CORBA s with F PO 3	es of in y discu rn tren spects ice orio 5) buildi ogies a alizatio b servio A reali <b>Progra</b> 4	mplema iss the iss the iss the iss the iss the iss in boot of EJB ented a iss is issued and star on of constant of	entatio key colusines: 3 tech rchitec ware s ndards ompon realize of com tomes PO 6	n using ncepts s comp nology ture. ystems for cor ents ind ed in Ja ponent (POs)	EJB in cor uting that a from npone cludin va. ss (CC	3 tech npone: and sc allow o comp ent mo ng Java CM).	nolog nt bas oftwar develo onent odels a a Bear	y. eed develo e enginee opment of s. and servic ns, JSP, S	opment a ering. f applica ce-orient ervlets,	and ations ted EJB, PO1 2
show the luence of t ow detaile sed on con <b>OUTCON</b> Mastering Familiarit computing Familiarit and Java H Familiarit	e ability to c this topic to ed knowled mponents an <b>MES (COS</b> g the principity with the ng. ity with the s RMI and ho ity with the of <b>PO PO</b>	ritically o model ge of as nd servition ): (3- ples for technol Java rea ow Web CORBA s with F PO 3	y discu rn tren spects ice orid 5) buildi ogies a alizatio b servid A reali <b>Progra</b> <b>PO</b> 4	ing soft and sta on of cccs are zation <b>PO</b> 5	key con usiness 3 tech architec tware s ndards ompon realize of com tcomes PO 6	s comp nology ture. ystems for cor ents ind ed in Ja ponent (POs) PO	in cor uting that a from mpone cludin va. s (CC	npone: and sc allow o comp ent mo ng Java CM).	nt bas oftwar develo onent odels a i Bear	s. and servic	ering. f applica ce-orient ervlets,	ted EJB, PO1 2
luence of t ow detaile sed on con <b>OUTCON</b> Mastering Familiarit computing Familiarit and Java H Familiarit	this topic to ed knowled mponents an <b>MES (COs</b> g the principity with the ng. RMI and ho ity with the and	o model ge of as nd servition ples for technol Java rea ow Web CORBA s with P PO 3	rn tren spects ( ice orid 5) buildi ogies a alizatio b servid A reali <b>Progra</b> <b>PO</b> 4	ds in b of EJB ented a ing soft and sta on of co ces are zation <b>m Out</b> <b>PO</b> 5	usiness 3 tech rrchitect tware s ndards ompon realize of comes tcomes PO 6	s comp nology eture. ystems for con ents ind ed in Ja ponent (POs) PO	that a from npone cludin va.	and so allow o comp ent mo ng Java CM).	oftwar develo onent odels a a Bear	e enginee opment of s. and servic ns, JSP, S	ering. f applica ce-orient ervlets,	ted EJB, PO1 2
ow detaile sed on con OUTCOM Mastering Familiarit computing Familiarit and Java H Familiarit	ed knowled mponents an <b>MES (COs</b> g the principity with the mg. ity with the RMI and ho ity with the <b>e Outcomes</b> <b>PO PO</b>	ge of as nd servi ): (3- ples for technol Java rea ow Web CORBA s with P PO 3	spects ice orid 5) buildi ogies a alizatio b servio A reali <b>Progra</b> <b>PO</b> 4	of EJB ented a ing soft and sta on of cc ces are zation <b>m Out</b> <b>PO</b> 5	3 tech rchitec ware s ndards ompon realize of comes tcomes PO 6	nology eture. ystems for con ents inded in Ja ponent (POs) PO	that a from npone cludin va. s (CC	comp ent mo ng Java CM).	onent odels a	s. and servic ns, JSP, S PO1	f applica ce-orient cervlets,	EJB, PO1 2
ed on con OUTCOM Mastering Familiarit computing Familiarit and Java H Familiarit	MES (COs g the principation of the principatio	nd servi ples for technol Java rea ow Wet CORBA s with F PO 3	ice orio 5) buildi ogies a alizatio b servio A reali <b>Progra</b> <b>PO</b> 4	ented a ing soft and sta on of co ces are zation <b>m Out</b> <b>PO</b> 5	ware s ndards ompon realize of com tcomes PO 6	ystems for cor ents ind ed in Ja ponent (POs) PO	from npone cludin va. cs (CC	comp ent mo ng Java CM).	onent dels a 1 Bear	s. and servic ns, JSP, S	ce-orient ervlets,	EJB, PO1 2
OUTCON Mastering Familiarit computing Familiarit and Java H Familiarit	MES (COs         g the principity with the         ng.         ity with the .         RMI and he         ity with the         e Outcomes         PO	j: (3-ples fortechnolJava reaow WebCORBAs with PPO3	5) · buildi ogies a alizatio b servid A reali Progra PO 4	ing soft and sta on of co ces are zation <b>m Out</b> <b>PO</b> 5	ware s ndards ompon realize of com tcomes PO 6	ystems for con ents ind ed in Ja ponent (POs) PO	npone cludin va. s (CC	ent mo ng Java CM).	odels a	nd servic	ervlets,	EJB, PO1 2
Mastering Familiarit computing Familiarit and Java I Familiarit	g the princip ity with the fig. RMI and he ity with the figures the Outcomes PO PO	Java rea ow Web CORBA s with P PO 3	buildi ogies a alizatio b servio A reali Progra PO 4	and sta on of co ces are zation <b>m Out</b> <b>PO</b> 5	ndards ompon realize of com tcomes PO 6	for contents induced in Jacobi (POs)	npone cludin va. s (CC	ent mo ng Java CM).	odels a	nd servic	ervlets,	EJB, PO1 2
Familiarit computing Familiarit and Java I Familiarit	ity with the mag. ity with the magnetic operation of the magnetic operation operation of the magnetic operation operati	technol Java rea ow Web CORBA s with F PO 3	ogies a alizatio b servio A reali Progra PO 4	and sta on of co ces are zation <b>m Out</b> <b>PO</b> 5	ndards ompon realize of com tcomes PO 6	for contents induced in Jacobi (POs)	npone cludin va. s (CC	ent mo ng Java CM).	odels a	nd servic	ervlets,	EJB, PO1 2
computing Familiarit and Java I Familiarit	ng. ity with the . RMI and he ity with the e Outcomes PO PO	Java rea ow Web CORBA s with P PO 3	alizatio b servio A reali Progra PO 4	on of concess are zation of <b>Out PO 5</b>	ompon realize of com tcomes PO 6	ents ind ed in Ja ponent (POs) PO	cludin va. s (CC	ng Java CM).	a Bear	ns, JSP, S	ervlets,	EJB, PO1 2
Familiarit and Java H Familiarit	ity with the . RMI and he ity with the e Outcomes PO PO	OW Web CORBA S with P PO 3	b servi A reali Progra PO 4	ces are zation m Out PO 5	realize of com tcomes PO 6	ed in Ja ponent (POs) PO	va. s (CC	CM).		PO1		PO1 2
and Java I Familiarit	RMI and hoity with thee OutcomesPOPO	OW Web CORBA S with P PO 3	b servi A reali Progra PO 4	ces are zation m Out PO 5	realize of com tcomes PO 6	ed in Ja ponent (POs) PO	va. s (CC	CM).		PO1		PO1 2
Familiarit	ity with the e Outcomes PO PO	CORBA s with P PO 3	A reali Progra PO 4	zation m Out PO 5	of com tcomes PO 6	ponent (POs) PO	s (CC		PO9		PO11	2
	e Outcomes PO PO	s with P PO 3	Progra PO 4	m Out PO 5	tcomes PO 6	(POs) PO			PO9		PO11	2
	PO PO	PO 3	PO 4	PO 5	PO 6	PO	PO	3	PO9		PO11	2
	1 2					7				0		
1		H	н		М					U		м
I	H H		**	11	IVI	Μ	L		H	L	Η	IVI
H	H H	Μ	Μ	Η	L	L	L		H	L	Η	Н
H	H H	Н	Η	Η	Η	Μ	L		H	L	Η	Н
I	H M	Μ	Μ	Μ	Μ	Μ	L		Μ	L	Μ	L
s	PSO1	PS	02	PS	603	P	<b>SO</b> 4		P	SO5	PS	506
I	H	Η		L		Η				Н	ľ	М
H	H	Μ		Μ		Η				Μ	]	H
I	H	H		Μ		Η				Μ	]	H
	Μ	Μ		Μ		Η				Μ	Ι	М
licates Str	trength of C	Correla	tion	H- Hi	gh, M-	Mediu	ım, L	Low				
	g Sciences	nities and Social ces	gram Core	ogram Electives	pen Electives	ractical / Project	Internships / Technical	oft Skills				
		Sciences eering Sciences	ing Scie	q cie	asic Sciences ngineering Sciences umanities and Soci ciences ogram Core ogram Electives	asic Sciences ngineering Sciences umanities and Socié ciences rogram Core rogram Electives pen Electives	tasic Sciences Ingineering Sciences Iumanities and Socia ciences rogram Core rogram Electives pen Electives ractical / Project	asic Sciences ngineering Sciences umanities and Soci iences ogram Core ogram Electives pen Electives pen Electives factical / Project	asic Sciences ngineering Sciences umanities and Socit ciences rogram Electives pen Electives pen Electives ractical / Project Internships / Techn oft Skills	asic Sciences Ingineering Sciences Iumanities and Socia ciences rogram Electives pen Electives pen Electives ractical / Project Internships / Techn oft Skills	Basic Sciences Engineering Sciences Humanities and Socia Sciences Program Electives Open Electives Practical / Project Internships / Techn Soft Skills	Basic Sciences Engineering Sciences Humanities and Socis Sciences Program Electives Open Electives Practical / Project Internships / Techn Soft Skills



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E04	COMPONENT BASED TECHNOLOGY	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- Show clear understanding of theoretical concepts of component based development and be able to apply the appropriate techniques of implementation using EJB 3 technology.
- To show the ability to critically discuss the key concepts in component based development and influence of this topic to modern trends in business computing and software engineering.
- Show detailed knowledge of aspects of EJB 3 technology that allow development of applications based on components and service oriented architecture.

#### **Distributed Object Technology UNIT I**

Introduction-Evolution of distributed systems-Evolution of distributed objects- Methods of distribution-Multi-Tier Architecture. Component Technology: Component Concepts-Modules- Interfaces-Callbacks -Directory services-Component Architecture-Component Based Software development.

#### **UNIT II Enterprise Foundations**

Enterprise Architecture Overview-Object Oriented Software Development for the Enterprise- Component based Software development for the Enterprise- Java Enterprise System Architecture with J2EE.JAVA Based Component Model: JAVA Beans-Remote Method Invocation(RMI)-RMI-IIOP. Enterprise Java Beans: Introduction-EJP Architecture-Types of Enterprise Beans-Life Cycle of Beans-Steps in developing an EJP.

#### **UNIT III Architecture of Corba**

The History of CORBA- CORBA Architecture-ORB-Portable Object Adapter-Internet inter-ORB Protocol(IIOP)- Dynamic CORBA-OMG IDL-CORBA Services-CORBA Object Location Service-CORBA Activation Framework-CORBA Messaging Services-CORBA Event Service-CORBA Security Service-CORBA Object Transaction Service. CORBA Component Model-Model Driven Architecture.

#### **UNIT IV Microsoft Component Technologies**

Evolution of Microsoft Component Technologies-OLE-Active X Controls-DLL Surrogates and Executables-Components with ATL-DCOM Architecture-Interface-COM IDL. Service Oriented Architecture: Introduction to Web Services-Introduction to Service oriented architecture-Business Value of SOA-Architectural Elements of SOA- Web Services and Service Oriented Architecture.

#### **UNIT V** Application

Client Server using -RMI-RMI/IIOP- CORBA-Enterprise Beans. Componentized Application Development using EJP. **Total Hours: 45** 

## **TEXT BOOKS:**

1. G. Sudha Sadasivam(2008)- Component Based Technology, Wiley India Pvt.Ltd.

### **REFERENCE BOOKS:**

- 1. Robert Orfali, Dan Harkey and Jeri Edwards (2002)-The Essential Client / Server Survival Guide, Galgotia
- 2. Publications Pvt. Ltd.
- 3. Tom Valesky (2002) Enterprise Java Beans, Pearson Education.
- 4. Jason Pritchard (2000) COM and CORBA Side by Side, Addison Wesley.
- Joel Murach, Anne Boehm (2012)- C#, Murach. 5.

Subject Name : Subject Code:

L **T**/ P/R Tv/

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

#### 9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs

С



				2	018 Re	egulati	on							
BCS18E05			I	E-CON	<b>IMER</b>	CE			Lb ET			S.Lr		
	Pre	requisi	te: BIT	18I02					Ту	r	3	0/0	0/0	3
L : Lecture T : Tut	orial	S.Lr : \$	Supervi	ised Le	arning	P:Pr	oject F	R : Rese	earch	C: Cı	redits			
Ty/Lb/ETL : Theo							-							
<ul> <li>OBJECTIVES :</li> <li>Understan</li> <li>Recognize</li> <li>Explain th</li> <li>Discuss th eCommerce</li> <li>Explain th</li> <li>Discuss th</li> </ul>	e the bus e techno e curren ce; e econo	siness i ologies nt drive omic co	mpact requir ers and	and po ed to n inhibit ences o	tential nake e- ors fact f e-Cor	Comm ing the	erce vi busine e;	able ess wor	ld in a	adopt	ing an	d using	5	
COURSE OUTC					i the us			ici.						
CO1 CO2 CO3	A I	Analyze Describ	e the in e the ir	npact o nfrastru	f E-cor icture for ment s	or E-co	ommerc		nodel	ls and	l strate	egy		
Mapping of Cour														
COs/POs	PO1	PO	PO	PO	PO	PO	<b>PO PO8 PO PO1</b>			l PO	)1 I	<b>PO1</b>		
		2	3	4	5	6	7		9	9	0	1	2	2
CO1	Μ	Μ	H	Η	H	Η	H	H		H	Μ	Μ		N
CO2	H	H	Η	Η	H	H	H	H		H	Μ	M		N
CO3	Н	Η	Н	Η	H	Η	H	H	]	H	H	M		M
COs / PSOs	PS			02	1	03	ŀ	<u>PSO4</u>			<u>SO5</u>		PSO	6
CO1	H			<u>H</u>	-	H T		H			M		<u>H</u>	
CO2	H			H		H		H			M		H	
CO3 H/M/L indicates S	<u> </u>			H Horn 1		H L M	Madim	H			Μ		H	
n/wi/L indicates	strengt		orrelat		n- nig 	11, 1VI-   			UW					
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills					
					~									



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E05	E-COMMERCE	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- Understand the nature of e-Commerce
- Recognize the business impact and potential of e-Commerce
- Explain the technologies required to make e-Commerce viable
- Discuss the current drivers and inhibitors facing the business world in adopting and using eCommerce;
- Explain the economic consequences of e-Commerce;
- Discuss the trends in e-Commerce and the use of the Internet.

#### UNIT I Introduction

History of E-Commerce -E-Commerce Vs E-Business-Emergence of the Internet- Advantages-Disadvantages-Business model- E –Business Models based on the relationship of Transaction Parties- E – Business Models based on the relationship of Transaction Types- Technologies of World Wide Web-Internet Client Server Applications-Networks and Internets-Software Agents-Internet Standards and Specification-Internet Service Provider-Markup Language and the web-JavaScript-XML-Intranets and Extranets.

#### UNIT II E-Marketing

Identifying Web Presence Goals- The Browsing Behaviour Model-Online Marketing-E-Advertising-Internet Marketing Trends-Targets Markets-E-Branding-Marketing Strategies E-Security: Security on the Internet-E-Business Risk Management Issues-E-Payment Systems: Digital Token based e-payment System-Classification of New Payment System- Electronic Cash-Risk and E-Payment System-Designing E-paymentSystem- Digital Signature.

#### UNIT III E-Customer Relationship Management

CRM-ECRM Solutions- ECRM Toolkit-Typical Business Touch point. E-Supply Chain Management-Supply Chain Management- Supply chain Management for Various Industries- E- Strategy and Knowledge management.

#### UNIT IV Mobile Commerce

Information System for Mobile Commerce-Mobile Payments-Cellular Networks-Different Generations in wireless Communication- Technologies for mobile Commerce-WAP Programming Model. Portals for E-Business: Portals-Requirements of Intelligent Websites.

### UNIT V Applications

Plan your Business and create a web Site with wordpress.

#### **TEXT BOOK:**

1. P.T. Joseph, S.J. (2015), E-Commerce Indian Perspective Fifth Edition, PHI Learning

#### **REFERENCE BOOKS:**

- 1. Zheng Qin(2009), Introduction to E-Commerce, Springer.
- 2. Mamta Bhusry, E-Commerce, Laxmi Publications PVT Ltd.

#### 9 Hrs

9 Hrs

## 9 Hrs

9 Hrs

#### 9 Hrs

#### **Total Hours: 45**

#### - ---



						2018	Regula	tion							
Subject		: Su	bject Na	ame :				Ty/		_	Τ/	P/R	С		
BCS18	BE06							Lb/			S.Lr				
			ARTIF	ICIAL	INTEL	LIGEN	ICE	ETL	1						
		Pre	erequisi	te: NIL				Ту		3	0/0	0/0	3		
L : Lec	ture T	: Tuto	rial S.	Lr : Suj	pervised	Learnir	ng P:F	roject	R : Res	earch	C: Credi	ts			
Ty/Lb/	ETL :	Theory	/Lab/Ei	mbedde	d Theor	y and L	ab	U							
OBJE	CTIV	ES :													
•	The s	student	s will be	e able to	o solve p	roblems	s using	AI tech	niques						
•					ng AI te										
٠						nformati	ion in a	comput	tational	manner					
COUR			MES (C												
CO1					s of AI a	-									
CO2	Kno	ow vari	ous AI s	search a	algorithn	ns (unin	formed	, inform	ned, heu	ıristic	on,				
	0	U	gorithms	,											
CO3							edge re	presenta	ation (1	ogic-	based, fr	ame-based,	semantic		
					em prov										
CO4				king kn	owledge	e of rea	isoning	in the	presen	ce of	f incompl	ete and/or	uncertain		
005		ormatio		1	1			•	1	1 .	1 .	, 1 •	, 1		
CO5				cnowled	lge repr	esentatio	on, reas	soning,	and ma	achin	e learning	g technique	s to real-		
world problems Mapping of Course Outcomes with Program Outcomes (POs)															
COs/P	pping of Course Outcomes with Program Outcomes (POs)s/POsPO1PO2PO3PO4PO5PO6PO7PO8PPO10PO11PO12														
COS/P	Us	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P PO10 PO11 PO1					
										0 9					
<u>CO1</u>		тт		TT	TT	м	TT	м	М	9 H	TT	TT	TT		
CO1 CO2		H	H H	H H	H H	M	H H	M	M M	H H	H H	H H	H H		
CO2 CO3		H				M		M							
		H	H	H	H		H	M	M	H	M	H	H		
CO4		H	H	H	H	M	H	M	M	H	H	H	H		
CO5		H	H	H	H	Μ	H	Μ	Μ	H	Μ	H	H		
COs /		PS	01	PS	<b>SO2</b>	PS	03	PS	04		PSO5	P	506		
PSOs															
CO1															
CO2			H		H		Л	N			Н		H		
		I	H	]	H	H	ł	H	ł		Н		H		
CO3		l	H H	]	H H	H H	I I	H H	I I		H H		H H		
CO3 CO4			H H H		H H H	H H N	Н Н И	H H H	I I I		H H H		H H H		
CO3 CO4 CO5			H H H H	] ] [ [	H H H M	H H N H	H H M H	H H H	H H H H		H H		H H		
CO3 CO4 CO5	ındic		H H H H	] ] [ [	H H H	H H N H	H H M H	H H H	H H H H		H H H		H H H		
CO3 CO4 CO5	↓ indic		H H H H	] ] [ [	H H H M	H H H-H	H H M H	H H H Mediu	I I I Im, L-I		H H H		H H H		
CO3 CO4 CO5	indic	I I I ates St	H H H H	] ] ] of Cor	H H H VI relation	H H H-H	H H M H igh, M-	H H H Mediu	I I I Im, L-I		H H H		H H H		
CO3 CO4 CO5 H/M/L		I I I ates St	H H H trength	] ] ] of Cor	H H H VI relation	H H H-H	H H M H igh, M-	H H H Mediu	I I I Im, L-I		H H H		H H H		
CO3 CO4 CO5 H/M/L		I I I ates St	H H H H trength	] ] ] of Cor	H H H VI relation	H H H-H	H H M H igh, M-	H H H Mediu	I I I Im, L-I		H H H		H H H		
CO3 CO4 CO5 H/M/L		I I I ates St	H H H H trength	] ] ] of Cor	H H H VI relation	H H H-H	H H M H igh, M-	H H H Mediu	I I I Im, L-I		H H H		H H H		
CO3 CO4 CO5 H/M/L	Category Signature	I I I ates St	H H H H trength	] ] ] of Cor	H H H VI relation	H H H-H	H H M H igh, M-	H H H Mediu	H H H H		H H H		H H H		
CO3 CO4 CO5 H/M/L			H H H H	ies and ciences	H H H M	H H N H	H H M H	H H H	I I I Im, L-I		H H H		H H H		



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E06	ARTIFICIAL INTELLIGENCE	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- The students will be able to solve problems using AI techniques
- To develop new games using AI techniques •
- To guide the process of deducing information in a computational manner

#### **Introduction and Problem Solving UNIT I**

Introduction- Intelligent agent - Types of agents - Agent Structure - Problem solving agents - Problem Formulation - Uninformed search strategies - Breadth first search - Uniform cost search - Depth first search – Depth limited search – Bidirectional search – Searching with partial Information

#### UNIT II **Informed Search Methods and Game Playing**

Informed search Strategies - A* Heuristic function - Hill Climbing search - Constraint Satisfaction problem - Optimal decisions in games - Pruning - Alpha-Beta pruning - State-of-the-Art Game Programs

#### **Knowledge and Reasoning** UNIT III

Knowledge based agent - The Wumpus world environment - First-order logic -Building a Knowledge base - Properties of Good and Bad Knowledge bases - The Grocery Shopping World - Inferences in FOL - Forward and backward chaining algorithm

#### **UNIT IV Acting Logically**

Planning-Simple planning agent-Planning with state space search-Partial order planning-Practical planning - Practical planners - Planning and Acting - Conditional Planning - Fully Integrated planning and execution

#### UNIT V **Uncertain Knowledge Reasoning and Robotics**

Acting under Uncertainty - Knowledge Engineering for Uncertain Reasoning - Case study: The Pathfinder system - Robotics Introduction - Goods of Robots - Parts of Robots - Navigation and Motion planning.

**Total Hours: 45** 

### **TEXT BOOKS:**

- 1. Stuart R. Peter N. (2010) Artificial Intelligence A modern Approach, Prentice Hall
- 2. Elaine R. Kevin K. (2008) Artificial Intelligence Tata McGraw Hill

#### **REFERENCE BOOKS:**

1. Tim Jones M. (2008) Artificial Intelligence, A System Approach(Computer Science)

2. Ben Coppin (2004) Artificial intelligence illuminated, Jones and Bartlett Learning

# B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

# 9 Hrs

9 Hrs

9 Hrs

9 Hrs

#### 9 Hrs



2018 Regulation

~ ~ .	~				2010 1	kegulat	1011						
Subject Code:		bject N						Ty/	L	<b>T</b> /		R	С
BCS18E07	н	JMAN	COMI	PUTER	R INTE	RACT	ION	Lb/		S.L	r		
								ETL					
	Pre	erequisi	te: NIL	1				Ту	3	0/0	0/	/0	3
L : Lecture T : 7	Futorial	S.Lr	: Super	vised I	Learnin	g P:P	roject	R : Res	searcl	h C: C	redits	•	
Ty/Lb/ETL : Th	eory/L	ab/Emb	edded '	Theory	and La	ib							
<b>OBJECTIVES</b>	:												
•	Learn t	he foun	dations	of Hu	nan Co	mputer	Intera	ction					
•	Be fam	iliar wi	th the d	esign to	echnolo	ogies fo	r indiv	iduals a	and p	ersons	s with di	sabilitie	8
•	Manag	e HCI											
COURSE OUT	COM	ES (CC	<b>(</b> 3):(3)	- 5)									
CO1	To le	earn the	basic t	ermino	logies o	of HCI							
CO2	Und	arstand	the dec	ion too	hnologi	os for i	ndivid	uole on	1 por	cone u	vith disa	bilition	
CO2 CO3		erstand		0	<u> </u>					sons v	vitil ulsa	Diffues	
Mapping of Co				Ŭ		Ŭ,	,		1				
COs/POs	PO1	PO2	PO3	Progra	PO5	PO6	PO5	PO8	1	PO9	<b>PO10</b>	PO11	<b>PO12</b>
COS/FOS	H	H H	<u> </u>	H	<u>105</u> M	H	H	<u> </u>		H	H	H	H H
CO2	H	H	H	H	H	H	M	M		H H	 H	H	M
CO2	H	H	H	H	M	M	H	H		H	M	H	L
COs / PSOs		01	PS			03		PSO4			05		06
C01		H	I			M		M			<del>UU</del> H		H
CO2		H		Ī		H		H H		H			
CO3		H	I			H		H			<u> </u>		M
H/M/L indicate	es Strei	ngth of	Correl	ation			Medi	um, L-l	Low				
						Í							
								Sk					
		S	Social					cal					
		nce	Soc		$\sim$			inc					
٥ry		cie			ive		ect	ecł					
680	ces	Š	an	ore	ecti	ve	roj	T					
Category	ien	ing	ies	č	Е	scti	/ P	sd		ls			
	Sci	eer	niti	m	m	Ele	cal	shi		kil			
	ic	jint	mai	gra	gra	[ uc	ctic	), TD		ťS			
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill		Soft Skills			
					~	Ŭ				•1			
					-	1					1	1	



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E07	HUMAN COMPUTER INTERACTION	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- Learn the foundations of Human Computer Interaction
- Be familiar with the design technologies for individuals and persons with disabilities
- Manage HCI

### UNIT I Humans In HCI

Introduction-implications for HCI-overview of HCI-Mentor models in HCI-emotions in HCI-cognitive architecture –task loading and stress in HCI-theoretical framework and mitigation strategies-motivating ,influencing and persuading users – human error identification in HCI

### UNIT II Computers In HCI

Input technologies and techniques – sensor and recognition based input for interaction-visual displayshaptic interfaces-nonspeech auditory output-network based interaction-wearable computers-design of computer workstation

#### UNIT III Application/Domain Specific Design

HCI in health care-designing emotions for games, entertainment interfaces and interactive products-motor vehicle driver interfaces-HCI in aerospace-user centred design in games

#### UNIT IV Designing For Diversity

The digital divide-the role of gender in HCI-IT and older adults-HCI for kids-IT for cognitive supportphysical disabilities and computing technologies – an analysis of impairments-computing technologies for deaf and hard of hearing users

### UNIT V Managing HCI and Emerging Issues

Technology transfer-augmenting cognition in HCI-human values, ethics and design, cost justificationfuture trends in HCI

#### **Total Hours: 45**

### **TEXT BOOK:**

1. The Human Computer Interaction Handbook –Fundamentals evolving Technologies and emerging Applications – Andrew Sears, Julie A Jacko, CRC Press ,3rd edition, 2012.

#### **REFERENCE BOOK:**

1. Alan Dix, Janet Finlay, Gregory D.Abowd, Russell Beale, "Human Computer Interaction", Third Edition, Pearson Education.

# 9 Hrs

Hrs

9

# 9 Hrs

9 Hrs

#### 9 Hrs



					,	2018 R	egulati	0 <b>n</b>					
Subject Code:	Sul	bject Na	ame :				<b>v</b>		Ty/	Ι	Τ/	P/R	С
BCS18E08		WIRI	ELESS A	ND M	OBILE	NETV	VORK	ING	ĽĎ/		S.Lr		
									ETL				
	Pre	requisi	te: BIT18	BI01					Ty	3	0/0	0/0	3
L : Lecture T :					Learnin	g P:P	roiect	R : Resea					
Ty/Lb/ETL : T							j						
<b>OBJECTIVE</b>													
Variou	us forn	ns of w	ireless co	ommuni	cation a	and the	standar	ds and ar	chitecture	e of wire	eless LAI	N	
Conce	pts of	mobile	commun	nication	s, their	archited	cture an	d proced	ures; and				
Mobile	e netw	orking	and appl	ication	layer in	cluding	g WAP	protocols					
COURSE OU					2			•					
CO1					s comm	unicati	on and	the standa	ards and a	architect	ure of w	ireless LA	AN
CO2	C	oncents	of mobi	le com	nunicat	ions th	eir arch	itecture a	and proce	dures			
CO3									P protoco				
005	141		ict workin	ig and a	ppneau	ion laye	1 meru		protoco	15			
Mapping of C													
	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	PO11	PO12	2
	H	Η	Η	Η	Η	Μ	Μ	L	H	L	H	Μ	
	H	Η	Μ	Μ	Η	L	L	L	H	L	H	H	
	H	Η	Η	Η	Η	Η	Μ	L	H	L	Η	Η	
COs /	PS	01	PSC	02	PS	03	P	504	PSC	)5		PSO6	
PSOs													
	H		Η		L		Η		H			Μ	
	H		Μ		Μ		Н		Μ			Η	
	Η		Н		Μ		H		Μ			Η	
H/M/L indica	tes Sti	rength	of Corre	elation	H-H	igh, M-	Mediu	im, L-Lo	W				
								kil					
			al					al S					
		ces	Social					nice					
x		ene			/es		ct	chr					
got	es	Sci	nu	ė	ctiv	'es	oje	Te					
Category	enc	gu	es s	Coi	Ele	ctiv	Pr	/ SC	s				
C	Scie	eri	niti es	m (	m]	Ше	al /	shif	cill				
					~								
· · · · · · · · · · · · · · · · · · ·	ic S	gine	mar enc	gra	gra	ue	cti	Srn (	t S				
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E08	WIRELESS AND MOBILE	Ту	3	0/0	0/0	3
DCSIOEUO	NETWORKING		5	0/0	0/0	5

### **OBJECTIVES:**

- Various forms of wireless communication and the standards and architecture of wireless LAN
- Concepts of mobile communications, their architecture and procedures; and
- Mobile networking and application layer including WAP protocols

### UNIT I Wireless Communication

Cellular systems- Frequency Management and Channel Assignment- dropped call rates & their evaluation - MAC–SDMA–FDMA–TDMA – CDMA – Cellular Wireless Networks.

### UNIT II Wireless LAN

IEEE 802.11 Standards – Architecture – Services – Mobile Ad hoc Networks- WiFi and WiMAX - Wireless Local Loop.

### UNIT III Mobile Communications

GSM-architecture-Location tracking and call setup- Mobility management- GSM SMS —-Mobile Number portability -VoIP service for Mobile Networks – GPRS –Architecture and procedures.

### UNIT IV Mobile Networking

Mobile IP – Dynamic Host Configuration Protocol-Mobile Ad Hoc Routing Protocols– Multicast routing-TCP over Wireless Networks – Indirect TCP – Snooping TCP – Mobile TCP – Fast Retransmit / Fast Recovery – Wireless Networks.

### UNIT V Application Layer

WAP Model- Mobile Location based services -WAP Gateway –WAP protocols – WAP user agent profilecaching model-wireless bearers for WAP - WML – WMLScripts – WTA - iMode- SyncML.

### **Total Hours: 45**

### **TEXT BOOK:**

1. Goldsmith, Andrea (2005). *Wireless Communications*. Cambridge University Press. ISBN 0-521-83716-2.

### **REFERENCES BOOKS:**

- Lenzini, L.; Luise, M.; Reggiannini, R. (June 2001). "CRDA: A Collision Resolution and Dynamic Allocation MAC Protocol to Integrate Date and Voice in Wireless Networks".<u>IEEE Journal on</u> <u>Selected Areas in Communications (IEEE Communications Society</u>) 19 (6): 1153-1163. <u>ISSN 0733-8716</u>
- 2. Pahlavan, Kaveh; Krishnamurthy, Prashant (2002). Principles of Wireless Networks a Unified Approach. Prentice Hall. ISBN 0-13-093003-2.
- 3. Rappaport, Theodore (2002). Wireless Communications: Principles and Practice. Prentice Hall. ISBN 0-13-042232-0.

### 9 Hrs

9 Hrs

### 9 Hrs

9 Hrs



Subject BCS18		2:	Ĩ	Subject Name :Ty/LT/P/RDESIGN AND ANALYSIS OFLb/S.LrALGORITHMSETL							C				
			Prere	quisite: I	BCS180	01				Ту	3		0/0	0/0	3
				S.Lr : Su	•		•	Proje	ct R	: Re	search	C: C	Credits		
			y/Lab/	Embedde	ed Theo	ry and l	Lab								
OBJE															
•			-	rithm and	•	-									
٠				e differen	•		ign tech	inique	es.						
•				erative al	-										
•				e limitati		Algorith	m powe	er.							
				(COs) :											
CO1	Des	ign alg	gorithm	s for vari	lous cor	nputing	problei	ms							
CO2	Ana	lyze tł	ne time	and space	e comp	lexity o	f algori	thms.							
CO3 Manni	Mod	lify ex	isting a	vze the algorithm comes wi	s to imp		ficiency	у.	Ū	tecl	nniques	f	or a	given j	problem
COs/P		PO	PO2	PO3	PO4	PO5	PO6	P	PO	8	PO9		PO10	PO11	PO12
003/1	05	1	102	105	104	105	100	0 7		0	107		1010	1011	1012
CO1		Н	Н	Μ	Μ	L	L	L	I	М	L		L	Μ	L
CO2		Н	Н	Н	L	Μ	L	Μ		М	Н		Μ	Μ	Μ
CO3		Н	Μ	Μ	Μ	Н	Μ	L	I	М	H		L	Μ	Μ
COs/		PSO		PSO2	P	<b>SO3</b>	P	SO4			PSO5			PSO6	<u>.</u>
PSOs		1													
CO1		Н		Н		Μ		L		Н		H	Μ		L
CO2		Μ		Н		M		L		Н		M	Μ		L
<b>CO3</b>		Μ		Μ		L		L		Н		M	Μ		L
H/M/L	indic	cates S	trengt	h of Cor	relation	n H-H	High, M	I- Me	diun	n, L-	Low				
			ces	ocial			6,				-				
Category		Basic Sciences	ien	Humanities and S Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical	Skill	Soft Skills				
					~						**				



Subject Code	Subject Name	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18005	DESIGN AND ANALYSIS OF ALGORITHMS	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- To Learn the algorithm analysis techniques.
- To understand the different algorithm design techniques.
- To Understand Iterative algorithms
- To Understand the limitations of Algorithm power.

### UNIT I INTRODUCTION

# Notion of an Algorithm – Fundamentals of Algorithmic Problem Solving – Important Problem Types – Fundamentals of the Analysis of Algorithm Efficiency – Analysis Framework – Asymptotic Notations and its properties – Mathematical analysis for Recursive and Non-recursive algorithms.

### UNIT II BRUTE FORCE AND DIVIDE-AND-CONQUER

Brute Force – Closest-Pair and Convex Hull Problems-Exhaustive Search – Traveling Salesman Problem – Knapsack Problem – Assignment problem. Divide and conquer methodology – Merge sort – Quick sort – Binary search – Multiplication of Large Integers – Strassen's Matrix Multiplication-Closest-Pair and Convex Hull Problems.

### UNIT III DYNAMIC PROGRAMMING AND GREEDY TECHNIQUE

Computing a Binomial Coefficient – Warshall's and Floyd' algorithm – Optimal Binary Search Trees – Knapsack Problem and Memory functions. Greedy Technique– Prim's algorithm- Kruskal's Algorithm-Dijkstra's Algorithm-Huffman Trees.

### UNIT IV ITERATIVE IMPROVEMENT

The Simplex Method-The Maximum-Flow Problem – Maximm Matching in Bipartite Graphs- The Stable marriage Problem.

UNIT V COPING WITH THE LIMITATIONS OF ALGORITHM POWER 9 Hrs Limitations of Algorithm Power-Lower-Bound Arguments-Decision Trees-P, NP and NP-Complete Problems–Coping with the Limitations – Backtracking – n-Queens problem – Hamiltonian Circuit Problem – Subset Sum Problem-Branch and Bound – Assignment problem – Knapsack Problem – Traveling Salesman Problem- Approximation Algorithms for NP – Hard Problems – Traveling Salesman problem – Knapsack problem.

### **TEXT BOOK:**

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Third Edition, Pearson Education, 2012.

### **REFERENCE BOOKS:**

- 1. Thomas H.Cormen, Charles E.Leiserson, Ronald L. Rivest and Clifford Stein, "Introduction to Algorithms", Third Edition, PHI Learning Private Limited, 2012.
- 2. Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman, "Data Structures and Algorithms", Pearson Education, Reprint 2006.
- 3. Donald E. Knuth, "The Art of Computer Programming", Volumes 1& 3 Pearson Education, 2009. Steven
  - S. Skiena, "The Algorithm Design Manual", Second Edition, Springer, 2008.
- 4. http://nptel.ac.in/

### **Total Hours: 45**

## 9 Hrs

9 Hrs

9 Hrs



## DEPARTMENT OF INFORMATION TECHNOLOGY 2018 Regulation 6th SEMESTER ELECTIVES – E-II (Common to CSE&IT)

Subject Co BCS18E09		Subje		ame : WEB M	INING		]	Гу/ Lb/ LTL	L			ly Lr	P/R	C	~
		Prerec	quisit	te: BCS1	8011			Ту	3		0/	/0	0/0	3	;
				utorial		Supervi		-	P : Proj	ect R	: Rese	earch C:	Credits		
				eory/Lab					5						
	OBJE	ECTIV	/E :												
	•			rstand th											
	٠			v about th			0 0		•						
	•			y the wel				nalysis	of web	data f	for nev	w patterr	ns		
	COU	RSE (	DUT	COMES	G (COs)	:(3-5	<b>(</b> )								
CO1			• I	Develop	semanti	c web r	elated a	applicat	ions.						
CO2				Represen				<b>A A</b>							
CO3				Predict h		-	-		b and re	elated	comm	unities			
CO4				/isualize											
	Марр	oing of		ırse Out				Outco	mes (P	Os)					
COs/POs	PC		<b>O2</b>	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8			PO9	<b>PO10</b>	PO11	<b>PO12</b>
CO1	N	<b>1</b> ]	М	Μ	Н	Μ	Μ	Μ	L			Н	Н	Μ	Μ
CO2	H		L	L	Μ	Η	Η	Μ	Η			Н	L	H	L
CO3	N	1	H	Η	Η	Μ	Η	Μ	Μ			Μ	L	L	Μ
CO4	N		H	Μ	Μ	Μ	Μ	Μ	Η			Μ	Μ	H	Μ
COs / PSOs		PSO1		PSC	02	PS	03	PS	SO4			PS	SO5	PS	06
CO1		Μ		Μ	[	I	I	]	H				L	N	Л
CO2		Н		Μ		N	1		H				H		H
CO3		Μ		Н	[	I	I		L			]	H	N	Л
CO4		Μ		L	ı	N	1	I	Μ			I	M	N	A
	H/M/	L indi	cates	s Streng	th of C	orrelat	ion H	[- High	, M- M	ledium	ı, L-L	ωW		-	
Category	Basic Sciences	Fnoinearing Sciences		Humanities and Social Sciences	Program Core	<ul> <li>Program Electives</li> </ul>	Open Electives	Practical / Project	Internships / Technical Skill			Soft Skills			



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E09	WEB MINING	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- To understand the characteristics of the Internet and data mining
- To know about the web crawling algorithm implementation
- To study the web data collection and analysis of web data for new patterns •

#### **Data Mining Foundations** UNIT I

9 Hrs Association Rules and Sequential Patterns - Basic Concepts of Association Rules - Apriori Algorithm-Data Formats for Association Rule Mining - Mining with Multiple Minimum Supports - Mining Class Association Rules - Basic Concepts of Sequential Patterns - Generating Rules from Sequential Patterns.

#### UNIT II **Information Retrieval and Web Search**

Basic Concepts of Information Retrieval - Information Retrieval Models - Relevance Feedback -Evaluation Measures - Text and Web Page Pre-Processing - Inverted Index and Its Compression - Latent Semantic Indexing - Web Search - Meta-Search - Web Spamming.

#### UNIT II **Social Network Analysis**

Social Network Analysis - Co-Citation and Bibliographic Coupling - Page Rank - HITS- Community Discovery

#### **UNIT IV** Web Crawling

A Basic Crawler Algorithm - Implementation Issues - Universal Crawlers - Focused Crawlers - Crawler Ethics and Conflicts.

### UNIT V **Opinion Mining and Sentiment Analysis**

The Problem of Opinion Mining - Document Sentiment Classification - Sentence Subjectivity and Sentiment Classification- Opinion Lexicon Expansion - Aspect-Based Opinion Mining - Mining Comparative Opinions - Opinion Search and Retrieval.

### **Total Hours: 45**

### **TEXT BOOK:**

1. Bing Liu, 2011, Web Data Mining Exploring Hyperlinks, Contents and Usage Data, , Second Edition, Springer.

### **REFERENCE BOOK:**

1. Soumen Chakrabarti, 2002, "Mining the Web", Morgan-Kaufmann Publishers, Elseiver.

### 9 Hrs

## 9 Hrs

### 9 Hrs



Cubicat Cal-	. C1	NT NT			201	o Kegu	lation		TT. (	т		D/D	
Subject Code: BCS18E10	. Sul	bject Na WFB	ame : DATA I	DESIC	N & N		FMEN	Т	Ty/	L	T/	P/R	C
DUSIOEIU		VV ED	UAIAI	DE91G	11 00 111	ANAG		L.	Lb/		S.Lr		
	D			0100					ETL	2	0./0	0/0	
			te: BIT18		<del>.</del>			D D	Ty	3	0/0	0/0	3
L : Lecture T							roject	R : Rese	earch C:	: C1	edits		
Ty/Lb/ETL : '		/Lab/E	mbeadea	Theory	y and L	ab							
• The stude		1 ha ah1	a ta anal		d avalu	ata ta m			ab aita l	•••	ad uman	roconti	mond
1110 500.00													guages like
<ul> <li>To learning</li> <li>Java scrip</li> </ul>				ver base	ed appn	ication	using s	erver an	a chem	SIC	ie script	ing lang	guages like
<ul> <li>To learn t</li> </ul>				vah sita	using s	orinting	langua	ages and	the tecl	hnc	logias li	ko YM	ΙΛΙΛΥ
													ss in a web
• The stude site design			iow to p	ian, ues	ngn, tes	ang an	a prout	iction a	na post-	p	ouucii0i	i proces	
The stude		have th	ne ability	to desi	on a sta	tic and	dynami	ic web s	ite hase	d u	non the	end use	r need
COURSE OU					511 0 500		a j nunn		100 0000	u u	ron the		
CO1			valuate a		te								
CO2			make a			e onlin	e applic	ations.					
CO3			wledge						and desi	gn	a quality	web si	te.
Mapping of (										<u> </u>		-	
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	Р	010	PO11	PO12
<u>CO1</u>		-						100	107	-	010		1012
CO1	Η	Μ	Η	L	Н	Μ	L	L	M		M	H	Н
CO2	H H	M M	H H	L M	H H								
CO2 CO3	H H	M H	H H	M H	H H	M H M	L M M	L L L	M H H		M M M	Η	Н
CO2 CO3 COs /	Н	M H	Н	M H	H H	M H	L M M	L L	M H H	SO	M M M	H H H	H H
CO2 CO3 COs / PSOs	H H PS	M H 01	H H PSO	M H D2	H H PS	M H M O3	L M M PS	L L L SO4	M H H P	so	M M M	H H H	H H H SO6
CO2 CO3 COs / PSOs CO1	H H PS	M H O1 H	H H PSO	M H D2	H H PS	M H M O3	L M M PS	L L SO4	M H H	SO H	M M M	H H H	H H PSO6 H
CO2           CO3           COs /           PSOs           CO1           CO2	H H PS H	M H O1 H H	H H PSC H H	M H D2	H H PS	M H M O3	L M M PS	L L L SO4 H H	M H H	SO H H	M M M	H H H	H H PSO6 H H
CO2           CO3           COs /           PSOs           CO1           CO2           CO3	H H PS H H	M H O1 H H H	H H PSC H H H	M H D2	H H PS	M H M O3	L M PS	L L SO4 H H	M H H	SO H	M M M	H H H	H H PSO6 H
CO2           CO3           COs /           PSOs           CO1           CO2	H H PS H H	M H O1 H H H	H H PSC H H H	M H D2	H H PS	M H M O3	L M PS	L L SO4 H H	M H H	SO H H	M M M	H H H	H H PSO6 H H
CO2           CO3           COs /           PSOs           CO1           CO2           CO3	H H PS H H	M H O1 H H H rength	H H PSC H H H	M H D2	H H PS	M H M O3	L M PS	L L SO4 H H Im, L-L	M H H	SO H H	M M M	H H H	H H PSO6 H H
CO2           CO3           COs /           PSOs           CO1           CO2           CO3	H H PS H H	M H O1 H H H rength	H H PS( H H H of Corre	M H D2	H H PS I I H-H	M H M O3	L M PS	L L SO4 H H Im, L-L	M H H	SO H H	M M M	H H H	H H PSO6 H H
CO2 CO3 COs / PSOs CO1 CO2 CO3 H/M/L indica	H H PS H H H ates St	M H O1 H H H rength	H H PS( H H H of Corre	M H D2 [ [ elation	H H PS I I H-H	M H O3 L L igh, M	L M PS	L L SO4 H H Im, L-L	M H H	SO H H	M M M	H H H	H H PSO6 H H
CO2 CO3 COs / PSOs CO1 CO2 CO3 H/M/L indica	H H PS H H H ates St	M H O1 H H H rength	H H PS( H H H of Corre	M H D2 [ [ elation	H H PS I I H-H	M H O3 L L igh, M	L M PS	L L SO4 H H Im, L-L	M H H P	SO H H	M M M	H H H	H H PSO6 H H
CO2 CO3 COs / PSOs CO1 CO2 CO3 H/M/L indica	H H PS H H H ates St	M H O1 H H H rength	H H PS( H H H of Corre	M H D2 [ [ elation	H H PS I I H-H	M H O3 L L igh, M	L M PS	L L SO4 H H Im, L-L	M H H P	SO H H	M M M	H H H	H H PSO6 H H
CO2           CO3           COs /           PSOs           CO1           CO2           CO3	H H PS H H H ates St	M H O1 H H H rength	H H PS( H H H of Corre	M H D2 [ [ elation	H H PS I I H-H	M H O3 L L igh, M	L M PS	L L SO4 H H	M H H P	SO H H	M M M	H H H	H H PSO6 H H
CO2 CO3 COs / PSOs CO1 CO2 CO3 H/M/L indica	H H PS H H H ates St	M H O1 H H H rength	H H PS( H H H of Corre	M H D2 [ [ elation	H H PS I I H-H	M H O3 L L igh, M	L M PS	L L SO4 H H Im, L-L	M H H P	SO H H	M M M	H H H	H H PSO6 H H
CO2 CO3 COs / PSOs CO1 CO2 CO3 H/M/L indica	H H PS H H	M H O1 H H H	H H PSC H H H	M H D2	H H PS	M H M O3	L M PS	L L SO4 H H Im, L-L	M H H	SO H H	M M M	H H H	H H PSO6 H H



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E10	WEB DATA DESIGN & MANAGEMENT	Ту	3	0/0	0/0	3

### **OBJECTIVES :**

- The students will be able to analysis and evaluate to propose a new web site based upon recent trend
- To learn to develop a client-server based application using server and client side scripting languages like Java script, JSP, ASP and PHP.
- To learn to develop a dynamic web site using scripting languages and the technologies like XML, AJAX.
- The student will learn how to plan, design, testing and production and post- production process in a web site designing.
- The student will have the ability to design a static and dynamic web site based upon the end user need.

### UNIT I Site Organization and Navigation

User centered design – Web medium – Web design process – Evaluating process – Site types and architectures - Navigation theory - Basic navigation practices - Search - Site maps

### UNIT II **Elements of Page Design**

Browser compatible design issues - Pages and Layout - Templates - Text - Color - Images - Graphics and Multimedia - GUI Widgets and Forms – Web Design patterns.

### **UNIT III Scripting Languages**

Client side scripting: XHTML – DHTML– JavaScript– XML Server side scripting: Perl – PHP – ASP/JSP Designing a Simple web application.

### **UNIT IV Pre-Production Management**

Principles of Project Management - Web Project Method - Project Road Map - Project Clarification -Solution Definition - Project Specification - Content - Writing and Managing content.

### UNIT V **Production, Maintenance and Evaluation**

Design and Construction - Testing, Launch and Handover - Maintenance - Review and Evaluation - Case Study

### **Total Hours: 45**

### **TEXT BOOKS:**

- 1. Themas A. Powell (2003) The Complete Reference Web Design (3rd ed.), Tata McGraw Hill
- 2. Ashley Friedlein (2001) Web Project Management, Morgan Kaufmann Publishers
- 3. H. M. Deitel, P. J. Deitel, A. B. Goldberg (2004) Internet and World Wide Web How to *Program*(3rd ed.) Pearson Education

### **REFERENCE BOOKS:**

- 1. Joel Sklar (2001)Principles of Web Design, Thomson Learning
- Van Duyne, Landay, and Hong (2006) The Design of Sites: Patterns for creating winning websites 2.  $(2^{nd} edition.)$  Prentice Hall
- 3. Lynch, Horton and Rosenfeld (2002) Web Style Guide: Basic Design Principles for Creating Web Sites (2nd edition.) Yale University Press.

## 9 Hrs

9 Hrs

9 Hrs

### 9 Hrs



adu, India.

### DEPARTMENT OF INFORMATION TECHNOLOGY

Code: 211	Subjec				EMENT			Ty/ Lb/ ETL	L	T/ S.Lr		R C
	Prereq	uisite: N	IL					Ty	3	0/0	0/0	) 3
ıre T : T	utorial	S.Lr : 5	Supervis	ed Lear	ning P	: Projec	t R : R	esearch	C: C	redits		
TL:The	eory/Lab	/Embed	ded The	eory and	l Lab	-						
						nization	1					
					ss orgar	nization.						
							~ .					
		-		-						-	-	
				k manag	gement (	through	risk ide	entificati	on, ri	sk meas	suremer	t and risk
				d how to	o manag	ge it.						
g of Cou	urse Ou	tcomes	with Pr	ogram	Outcon	nes (PO	s)					
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO	10 F	PO11	PO12
Н	L	Μ	Μ	Н	Μ	L	Μ	Μ	Μ	H	ł	Н
L	L	Μ	Н	Н	Μ	Μ	Н	H	Η	Ι		Н
Н	Μ	L	Н	Μ	L	Η	Μ	L	L	Ν	Ν	Μ
PS	01	PS	02	PS	03	PS	<b>504</b>	P	SO5		Р	SO6
												-
												Μ
	N											Н
									Μ	I	I	Μ
indicate	s Streng	th of Co	orrelati	on H-	High,	M- Mee		L-Low	r —			1
Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	▲ Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
	The second secon	Prereq       Ire T : Tutorial       TL : Theory/Lab       TIVES :       and categories th       the various risk of       risk manageme       E OUTCOMES       demonstrate kr       understand the       management (of       understand ope       g of Course Ou       PO1       PO2       H       L       H       M       H       M       H       M       H	211       R         Prerequisite: N         ure T : Tutorial S.Lr : S         TL : Theory/Lab/Embed         TIVES :         and categories the variou         the various risk control r         trisk management progration         trisk management progration         trisk management progration         the various risk control r         trisk management progration         the various risk control r         trisk management progration         demonstrate knowledge         understand the approace         management (or mitigation         understand operational         g of Course Outcomes         PO1       PO2         PO3         H       L         H       M         H       M         H       M         H       M         H       M         H       M         H       M         M       M         H       L         ndicates Strength of Co	RISK MA         Prerequisite: NIL         Ire T : Tutorial S.Lr : Supervise         TL : Theory/Lab/Embedded The         TIVES :         and categories the various risks         the various risk control measure         risk management program for a         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the         understand the approach to risk         management (or mitigation)         understand operational risk and         g of Course Outcomes with Pr         PO1       PO2         PO3       PO4         H       L         H       M         H       M         H       M         H       M         H       M         H       M         H       M         M       M         H       L         Ideates Strength of Correlati	RISK MANAGHPrerequisite: NILrre T : Tutorial S.Lr : Supervised LearTL : Theory/Lab/Embedded Theory andTIVES :and categories the various risks face bythe various risk control measures availarisk management program for a busineE OUTCOMES (COs) : (3-5)demonstrate knowledge of the range ounderstand the approach to risk management (or mitigation)understand operational risk and how tog of Course Outcomes with ProgramPO1PO2PO3PO4PO5HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM <tr 2"="" colspan="&lt;/td&gt;&lt;td&gt;RISK MANAGEMENT         Prerequisite: NIL         ure T : Tutorial S.Lr : Supervised Learning P         TL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an orgation of a business organ         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of finance         understand the approach to risk management of management (or mitigation)         understand operational risk and how to manage         g of Course Outcomes with Program Outcom         P01       PO2       PO3       PO4       PO5       PO6         H       L       M       H       M       L         PSO1       PSO2       PSO3       H       M       L         M       M       M       M       H       M       H       H       M       H       H       M       H       H       M       M       H       H       M       H       H       M       H       H       M       H       H       M       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H&lt;/&lt;/td&gt;&lt;td&gt;RISK MANAGEMENT         Prerequisite: NIL         Prerequisite: NIL         Tre T : Tutorial S.Lr : Supervised Learning P : Project         TL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization         the various risk control measures available         erisk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and 1         understand the approach to risk management through management (or mitigation)         understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (PO PO1         PO1       PO2       PO3       PO4       PO5       PO6       PO7         H       L       M       H       M       L       H         PSO1       PSO2       PSO3       PS       PS         H       M       M       L       M         M       M       M       L       M         H       M       M       M       M         H       M       M       M       M&lt;/td&gt;&lt;td&gt;RISK MANAGEMENT         Prerequisite: NIL         rerequisite: Supervised Learning P : Project R : R         TUEOTY/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization the various risk control measures available         risk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and financia         understand the approach to risk management through risk ide management (or mitigation)         understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8         H       L       M       H       M       L       M         PSO1       PSO2       PSO3       PSO4       M&lt;/td&gt;&lt;td&gt;RISK MANAGEMENT       Lb/&lt;br&gt;ETL         Prerequisite: NIL       Ty         Ty         rer T : Tutorial S.Lr : Supervised Learning P : Project R : Research TL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization         the various risks face by an organization         the various risk control measures available         risk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and financial related         understand the approach to risk management through risk identificati         management (or mitigation)       understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (POs)       PO1         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9         H       L       M       H       M       L       M       M         H       M       L       H       M       L       M       M         H       M       L       H       M       L       M       M         H       M&lt;/td&gt;&lt;td&gt;RISK MANAGEMENTLb/&lt;br/&gt;ETLPrerequisite: NILTy3re T : TutorialS.Lr : Supervised LearningP : ProjectR : Research C: C:TL : Theory/Lab/EmbeddedTheory and LabTIVES :and categories the various risks face by an organizationthe various risks face by an organizationthe various risks face by an organizationthe various risk control measures availablerisk management program for a business organization.E OUTCOMES (COs) : (3-5)demonstrate knowledge of the range of financial and financial related riskunderstand the approach to risk management through risk identification, ri&lt;br/&gt;management (or mitigation)understand operational risk and how to manage it.g of Course Outcomes with Program Outcomes (POs)PO1PO2PO3PO4PO5PO6PO7PO8PO9POHLMHMLLLLLPSO3PSO4PSO5HMLLMHHHLLMHHHHLLMMHHLLMMHHLLMMHHMLLMMHLLMMHHMHHMH&lt;t&lt;/td&gt;&lt;td&gt;RISK MANAGEMENT       Lb/&lt;br&gt;ETL       S.Lr         Prerequisite: NIL       Ty       3       0/0         Trerequisite: NIL       Ty       3       0/0         Trerequisite: NIL       Ty       3       0/0         Trerequisite: NIL       Ty       3       0/0         Theory/Lab/Embedded Theory and Lab         Theory/Lab/Embedded Theory and Lab         Theory/Lab/Embedded Theory and Lab         Theory/Lab/Embedded Theory and Lab         Trest colspan=">colspan="2"&gt;colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"&gt;Colspan="2"       Colspan="2"       Colspan="2"       <th co<="" td=""><td>RISK MANAGEMENT       Lb/ ETL       S.Lr         Prerequisite: NIL       Ty       3       0/0       0/0         or T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits         TIL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization         the various risks face by an organization         the various risk control measures available         risk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and financial related risks facing organiz         understand the approach to risk management through risk identification, risk measurement         management (or mitigation)         understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11         H       L       M       H       H       M       L       M       M         PSO1       PSO2       PSO3<!--</td--></td></th></tr>	<td>RISK MANAGEMENT       Lb/ ETL       S.Lr         Prerequisite: NIL       Ty       3       0/0       0/0         or T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits         TIL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization         the various risks face by an organization         the various risk control measures available         risk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and financial related risks facing organiz         understand the approach to risk management through risk identification, risk measurement         management (or mitigation)         understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11         H       L       M       H       H       M       L       M       M         PSO1       PSO2       PSO3<!--</td--></td>	RISK MANAGEMENT       Lb/ ETL       S.Lr         Prerequisite: NIL       Ty       3       0/0       0/0         or T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits         TIL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization         the various risks face by an organization         the various risk control measures available         risk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and financial related risks facing organiz         understand the approach to risk management through risk identification, risk measurement         management (or mitigation)         understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11         H       L       M       H       H       M       L       M       M         PSO1       PSO2       PSO3 </td					
<td>RISK MANAGEMENT       Lb/ ETL       S.Lr         Prerequisite: NIL       Ty       3       0/0       0/0         or T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits         TIL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization         the various risks face by an organization         the various risk control measures available         risk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and financial related risks facing organiz         understand the approach to risk management through risk identification, risk measurement         management (or mitigation)         understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11         H       L       M       H       H       M       L       M       M         PSO1       PSO2       PSO3<!--</td--></td>	RISK MANAGEMENT       Lb/ ETL       S.Lr         Prerequisite: NIL       Ty       3       0/0       0/0         or T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits         TIL : Theory/Lab/Embedded Theory and Lab         TIVES :         and categories the various risks face by an organization         the various risks face by an organization         the various risk control measures available         risk management program for a business organization.         E OUTCOMES (COs) : (3-5)         demonstrate knowledge of the range of financial and financial related risks facing organiz         understand the approach to risk management through risk identification, risk measurement         management (or mitigation)         understand operational risk and how to manage it.         g of Course Outcomes with Program Outcomes (POs)         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11         H       L       M       H       H       M       L       M       M         PSO1       PSO2       PSO3 </td											



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E11	RISK MANAGEMENT	Ту	3	0/0	0/0	3

### **OBJECTIVES :**

- Identify and categories the various risks face by an organization •
- Explain the various risk control measures available
- Design a risk management program for a business organization. •

#### UNIT I The Risk Management Process

Introduction to software risk management, why do we need to manage risk in software development, Use, Objectives, Risk Management Paradigm, Risk management and litigation. Models for Risk Management.

### UNIT II **Discovering Risk In Software Development**

Risk attributes and Identification, Identifying software risk, Common software project risks, Risk Taxonomy, Risk Mapping, statements, reviews., Risk ownership and stakeholder management.

#### UNIT III **Risk Assessment**

Objectives and goals. Approach to assessment, Risk assessment tools and techniques, presenting the risk findings.

#### **UNIT IV Planning Risk Mitigation Strategies**

Risk Planning, Best practices in the risk planning, Risk management tools, Risk mitigation strategies, Formulating and Implementing risk management plans.

### UNIT V **Monitoring Risk In Software Projects**

Developing a process for monitoring risk, formulating a project risk database, Managing and tracking risk, Risk support tools. Software Risk Metrics, organization, estimation, development methodology.

### **Total Hours: 45**

### **TEXT BOOKS:**

- 1. Yacov Y. Haimes, (2011) Risk Modeling, Assessment, and Management, Wiley
- 2. John Mcmanus, (2004) Risk Management in software development projects, Butterworth-Heinemann

### **REFERENCE BOOKS:**

- 1. Martin Loosemore, John Raftery, (2006) Risk management in projects, Taylor & Francis Ltd
- 2. Ravindranath P. C, (2007) Applied Software Risk Management, Auerbach,
- 3. Dale Walter Karolak, (1995) Software engineering risk management, Wiley-Ieee Computer Society

### 9 Hrs

9 Hrs

9 Hrs

# 9 Hrs

### 9 Hrs

Elsevier



Subject Code:		Subje	ct Nam		2018 K	<u>reguiu</u>	.1011	Ty/	L	<b>T</b> /	P/R	С
BCS18E12			CRYP NETV		RAPHY SECU			Lb/ ET L		S.Lr		
		Prere	quisite:	BIT18	BI01			Ту	3	0/0	0/0	3
L : Lecture T : Tu			<b>.</b>		-	-	roject	R : Rese	arch C: C	redits		
Ty/Lb/ETL : The	ory/Lat	o/Embe	dded T	heory	and La	b						
<b>OBJECTIVES :</b>												
. The demote	1001				1	! 1		(* <b>1</b> .	•			
Understa			•				encryp	tion tech	iniques.			
<ul><li>gain basic</li><li>Understat</li></ul>		•			•	•						
<ul><li>Understar</li><li>understar</li></ul>			-			untoex	steme	and diff	arent mos	ائىدە مەرە	henticat	on and
• understar integrity		• •		puone	KEY CI	yptosy	5101118,		acht mes	sage auti	ienticat	on and
COURSE OUTO	A		):(3-	5)								
CO1					s of thr	eats to	Netwo	rk securi	ty and the	e associat	ted attac	ks
CO2		•	U	• 1					ion assets			
0.02									es are de			anacro,
<u> </u>				• •				*		*		
CO3		<u> </u>			<u> </u>			twork se	curity pro	otocols		
Mapping of Cou COs/POs	PO1	PO	PO	PO	M Out PO	PO	(POs) PO	PO8	PO9	PO1	PO1	PO1
COS/POS	PUI	PO 2	<b>PO</b> <b>3</b>	4	FU 5	PO 6	PO 7	PUð	P09	0	1	2
CO1	Н	H	H	M	M	M	M	M	Μ	L	L	L
CO2	H	M	H	M	H	M	M	M	M	L	L	L
CO3	H	H	H	Μ	H	Μ	Μ	Μ	Μ	L	L	L
COs / PSOs	PS	01	PS	02	PS	03		SO4	PS	505	PS	06
CO1	Н		L		Μ		Μ		L		Н	
CO2	Η		L		Μ		Μ		L		Н	
CO3	Η		L		Μ		Μ		L		Η	
H/M/L indicates	Streng	gth of (	Correla	tion	H- Hig	gh, M-	Mediu	ım, L-Lo	OW	-		
		ces	Social		S		t	hnical Skill				
Category	asic Sciences	ngineering Scien	ies and	rogram Core	rogram Elective	pen Electives	ractical / Projec	tternships / Tec	oft Skills			
Category	Basic Sciences	Engineering Science	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E12	CRYPTOGRAPHY AND NETWORK SECURITY	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- Understand OSI security architecture and classical encryption techniques.
- gain basic knowledge on the number theory.
- Understand various block cipher modes.
- understands the principles of public key cryptosystems, and different message authentication and integrity techniques

### UNIT I Introduction & Number Theory

OSI security architecture - Security attacks ,Services and Mechanisms - -Network security model-Classical Encryption techniques (Symmetric cipher model, substitution techniques, transposition techniques, stenography)- **NUMBER THEORY**: Modular arithmetic-Euclid's algorithm- Fermat's and Euler's theorem- The Chinese remainder theorem- Discrete logarithms.

### UNIT II Block Ciphers & Public Key Cryptography

Data Encryption Standard-Block cipher principles-block cipher modes of operation-Advanced Encryption Standard (AES)-Triple DES -RC5 algorithm. **Public key cryptography:** Principles of public key cryptosystems-The RSA algorithm-Key management - Diffie Hellman Key exchange--Elliptic curve cryptography.

### UNIT III Cryptographic Data Integrity Algorithms

Authentication requirement – Authentication function – MAC – Hash function – Security of hash function and MAC – MD5 - SHA - HMAC – CMAC - Digital signature and authentication protocols-DSS.

### UNIT IV Network Security Practice

Authentication Applications – Kerberos – X.509 Authentication Service – Electronic mail Security – Pretty Good Privacy – S/MIME – IP Security – Web Security.

### UNIT V System Security

Intruders – Intrusion Detection – Password Management – Malicious Software – Viruses and Related Threats -Viruses Countermeasures – Distributed Denial of Service Attacks - Firewalls – Firewall Design Principles – Trusted Systems.

## **Total Hours: 45**

### **TEXT BOOK:**

1. William Stallings (2011) *Cryptography And Network Security – Principles and Practices*, (5th ed.) Pearson Education.

### **REFERENCE BOOKS:**

- 1. Atul Kahate (2008) Cryptography and Network Security Tata McGraw Hill
- 2. Bruce Schneier (2007) Applied Cryptography, John Wiley & Sons Inc.
- 3. Charles B. Pfleeger, Shari Lawrence Pfleeger (2007) Security in Computing (4th ed.), Pearson Education

### 9 Hrs

9 Hrs

### 9 Hrs

9 Hrs



					2018 F	Regula	tion						
Subject Code:	Su	bject N						Ty/	L	Τ/	P/R	(	С
BCS18E13		MOB	ILE AI	DHOC	NETV	WORK	KS (S	Lb/		S.L			
								ET		r			
								L					
	Pr	erequis	ite: BI	T18I01	1			Ту	3	0/0	0/0		3
L : Lecture T : Tu	itorial	S.Lr:	Superv	vised L	earning	g P:P	roject	R : Res	earch	n C: Cr	edits		
Ty/Lb/ETL : The	ory/Lał	o/Embe	dded T	heory	and La	b							
<b>OBJECTIVES :</b>													
		of mob	ile ad h	loc net	works,	design	and in	nplemer	ntatio	n issue	es, and a	vailable	;
soluti													
	ledge o		-				1.0						
	-							luetootl					
			<u> </u>		ations,	plus ap	proach	les to in	terop	erabili	ty.		
COURSE OUTC		MES (COs) : ( 3- 5) Have gained an understanding of the current topics in							n in 1		Tand	WCNIa	hath
									.5 111	WIANE	18 and	w dins,	Jour
CO2		<ul><li>from an industry and research point of views.</li><li>Have an understanding of the principles of mobile ad hoc networks</li></ul>								works (	MANET	(s) and	
002								re-based			WOIKS (1		(s) and
CO3											ir implic	cations of	on data
000			ssion de										, ii uutu
Mapping of Cou													
COs/POs	<b>PO1</b>	PO	PO	PO	PO	PO	<b>PO7</b>	PO8	P	<b>PO9</b>	<b>PO1</b>	<b>PO1</b>	PO1
		2	3	4	5	6					0	1	2
CO1	Η	Μ	Μ	L	Μ	L	L	L	Ι		Μ	L	L
CO2	Η	Η	Μ	L	Μ	L	L	L	I		Μ	L	L
CO3	Η	Μ	Μ	L	Μ	L	L	L	Ι		Μ	L	L
COs / PSOs		01		02		03		SO4		PS	05		506
CO1	H		M		L		L		I			L	
CO2	H		L		L		M			Л		L	
CO3	H	41 67				1 1/			I			L	
H/M/L indicates	Streng	gth of C	Jorrela	ition	H- Hl	gn, M-	Medi	um, L-I	JOW				
								Skill					
		~	ial										
		lce	Social		~			mic					
IJ		cier			ive		ect	sch					
egc	ces	Š	an	ore	ecti	ve	roj	$^{\prime}$ T					
Category	ien	ring	ties	Ŭ	E	ecti	/ F	sdi		lls			
Ŭ	Sc	leei	anit	.am	am	Ē	ica]	idst		Ski			
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	ogr	Open Electives	Practical / Project	Internships / Technical		Soft Skills			
	Bĩ	Ē	Hı Sc	Pr	<ul> <li>Program Electives</li> </ul>	0 ¹	Pr	Ini		Sc			
					~								



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E13	MOBILE ADHOC NETWORKS	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- Knowledge of mobile ad hoc networks, design and implementation issues, and available solutions.
- knowledge of routing mechanisms
- Knowledge of the 802.11 Wireless Lan (WiFi) and Bluetooth standards.
- This includes their designs, operations, plus approaches to interoperability.

#### UNIT I Introduction

Introduction to adhoc networks - definition, characteristics features, applications -Characteristics of Wireless channel, Adhoc Mobility Models:- Indoor and outdoor models.

#### UNIT II **Medium Access Protocols**

MAC Protocols: design issues, goals and classification. Contention based protocols- with reservation, scheduling algorithms, protocols using directional antennas. IEEE standards: 802.11a, 802.11b, 802.11g, 802.15. HIPERLAN.

#### **UNIT III Network Protocols**

Routing Protocols: Design issues, goals and classification.Proactive Vs reactive routing, Unicast routing algorithms, Multicast routing algorithms, hybrid routing algorithm, Energy aware routing algorithm, Hierarchical Routing, QoS aware routing.

### **UNIT IV End-End Delivery and Security**

Transport layer : Issues in desiging- Transport layer classification, adhoc transport protocols. Security issues in adhoc networks: issues and challenges, network security attacks, secure routing protocols.

#### **UNIT V Cross Layer Design And Integration of Adhoc For 4g** 9 Hrs

Cross layer Design: Need for cross layer design, cross layer optimization, parameter optimization techniques, Cross layer cautionary prespective. Intergration of adhoc with Mobile IP networks.

**Total Hours: 45** 

### **TEXT BOOKS:**

- 1. C.Siva Ram Murthy and B.S.Manoj (2007) Ad hoc Wireless Networks Architectures and Protocols, (2nd ed.), Pearson Education
- 2. Charles E. Perkins (2000) Ad hoc Networking, Addison Wesley

### **REFERENCE BOOKS:**

1. Mohammad Ilyas (2002) The handbook of adhoc wireless networks, CRC press,

- 2. T. Camp, J. Boleng, and V. Davies , A Survey of Mobility Models for Ad Hoc Network Research, WirelessCommun. and Mobile Comp., Special Issue on Mobile
- 3. V.T.Raisinhani and S.Iyer (2004) ÉCLAIR; "An Efficient Cross-Layer Architecture for wireless protocol stacks, World Wireless cong., San francisco, CA,

### 9 Hrs

9 Hrs

9 Hrs



~				-		2018 R	eguia	1011			1		1 -	_	
Subject Coc	le:	Su	bject N							Ty/	L	Т/	<b>P/I</b>	R	С
						SIGN			]	Lb/		S.L			
BCS18E14				IMP	LEME	ENTAT	TION			ЕТ		r			
										L					
		Pro	erequis	ite: Bľ	T18I01					Ty	3	0/0	0/0	)	3
L : Lecture	$T \cdot Tuto$		S.Lr :				, P · P	roject	R · Re		-			0	0
Ty/Lb/ETL				-		-	-	lojeet	K . KC	scare	n c.	cicuits	•		
OBJECTIV		//Lau		uucu 1	neory		0								
	nderstan	d the	Dodd	roggin	rachar	nac									
							1								
	Inderstan						•		•		n				
	Inderstan							P/IP n	etwork	S					
	nderstar				•			_							
COURSE (	COURSE OUTCOMES (COs) : ( 3- 5)														
CO1 Understand IP Addressing schemes and TCP/IP Architecture															
CO2 Learn the fundamentals of network design and implementation															
CO3     Understand network management issues															
CO4     Learn and implement network applications															
Mapping of Course Outcomes with Program Outcomes (POs)															
COs/PC	COs/POs PO											)1	<b>PO1</b>	<b>PO1</b>	
		1	2	3	4	5	6	7		-		0		1	2
CO1		H	M	M	L	L	M	M	L		Н	Ň		H	M
CO2		H	Μ	Μ	L	Μ	Μ	M	L		Н	N		Н	M
CO3		H	Н	H	Μ	Μ	Μ	M	L		H	N		H	M M
CO4		Η	H	Η	Μ	Μ	Μ	Μ	Μ		Η				
COs / PSO	S	PS	01	PS	02	PS	03	P	SO4		ł	PSO5		PS	506
CO1		I	I	ł	I	I	L		Μ			Η		Ν	Л
CO2		I	H	I	I	N	Л		Н			Н		I	I
CO3		ł	Η	I	I	Ν	Л		Η			Н		I	I
CO4		I	I	I	I	I	L		Н			Н		I	I
H/M/L ind	icates St	reng	th of C	orrela	tion	H- Hig	gh, M-	Mediu	ım, L-	Low					
						s			-	,					
				d Sč		ive	~	lect	s / kill						
		Cer	50	an nce	ore	ecti	Vet	roj	Internships / Technical Skill	2					
y		len	inξ	ies cie	ŭ	Еľ	scti	/ F	nsł ica		ls				
Category	5	SC	eer Ses	nit S	am	am	Εlε	cal	ter		kil				
teg		lic	gine	ma tial	gre	gre	en	cti	In	3	t S				
Ca		Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Ľ		Soft Skills				
		-									~_		$\neg \uparrow$		
						$\checkmark$									
						-									
					1	1	1	1	1						



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E14	TCP/IP DESIGN AND IMPLEMENTATION	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- Understand the IP addressing schemes. •
- Understand the fundamentals of network design and implementation
- Understand the design and implementation of TCP/IP networks •
- Understand on network management issues
- Learn to design and implement network applications. .

#### UNIT I Introduction

Protocols and standards-standards organizations-internet standards-internet administration - Protocol layers-OSI model-TCP/IP Protocol suite-addressing.

### UNIT II **Underlying Technologies**

Wired LANs: IEEE Standards, frame format, addressing, Ethernet evolution, standard Ethernet, fast Ethernet Gigabyte Ethernet, Ten-Gigabyte Ethernet-Wireless LAN- Point-to-Point WANS-Switched WANs-Connecting Devices- Case study – developing simple LAN setup using ns-2 simulator

#### **IP Addresses and Routing UNIT III**

Switching-network layer services- issues- IPv4 Addresses: Classful addressing, classless addressing, special addresses-delivery-forwarding- IPv4: datagrams, fragmentation, options, checksums, IP package-ARP- RARP- ICMP-IGMP- Case study – Analyzing the trace file using awk and plot graph using xgraph.

### **UNIT IV Unicast and Multicast Routing Protocols**

Unicast routing – intra and inter domain routing – distance vector routing :Routing Information Protocol(RIP) - link state routing: Open Shortest Path First (OSPF) - path vector routing: Border Gateway Protocol (BGP) - Multicasting and Multicast routing protocols - - Case study - Developing a topology using more than two router and analyze the routing.

### UNIT V **TCP & UDP**

Introduction to Transport Layer - Services - Protocols. UDP - user datagram - UDP services - UDP package - UDP applications. TCP - segment - flow control - error control - congestion control - state transition diagram - TCP package. SCTP - services - features - Case study - Develop a network, attach various type TCP variant and analyze the trace file.

### **TEXT BOOK:**

1. Behrouz A. Forouzam (2010), "TCP/IP Protocol Suite", 4th Edition, Tata McGraw Hill..

### **REFERENCE BOOKS:**

- 1. Douglas E. Comer, David L. Stevens (2009), "Internetworking with TCP/IP Volume – II, III" 3rd Edition, PHI Learning Private Limited.
- 2. Richard Stevens W., (2011) "TCP/IP Illustrated, The Protocol-Volume I, II, II", 2nd Edition Addison-Wesley Pub Co.
- 3. Dougles E. Comer, (2000) "Internetworking with TCP/IP–Principles, Protocols & Architecture", 4th Edition, Pearson education.

# 9 Hrs

9 Hrs

## 9 Hrs

## 9 Hrs

# 9 Hrs

### **Total Hours: 45**



L : Lecture T : Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab OBJECTIVES : • To learn the computer forensic fundamentals • To understand various types of cyber crime activities involved in the digital world • To study various network security technologies to prevent the data from hacker or intruder COURSE OUTCOMES (COs) : (3-5) CO1 Students understood how to protect the data or how to secure their personal and official data in their computer. CO2 The students have the awareness on digital forensics frauds CO3 The students have the knowledge on keep the data in secure manner in the network usin network security technologies. Mapping of Course Outcomes with Program Outcomes (POs) COs/POs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 CO1 H H H H H H H H H H H H H H H H CO2 H H H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H CO3 H H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H H CO3 H H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H H H H CO3 H H H H H H H H H H H H H H H H H H H	Subject Code: BCS18E15	CY	YBER I	BER FORENSICS AND INTERNET Lb/ S.Lr SECURITY ETL S.Lr							/r		С	
Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab         OBJECTIVES :         • To learn the computer forensic fundamentals         • To understand various types of cyber crime activities involved in the digital world         • To study various network security technologies to prevent the data from hacker or intruder         COURSE OUTCOMES (COs) : (3 - 5)         CO1       Students understood how to protect the data or how to secure their personal and official data in their computer.         CO2       The students have the awareness on digital forensics frauds         CO3       The students have the knowledge on keep the data in secure manner in the network usin network security technologies.         Mapping of Course Outcomes with Program Outcomes (POs)       COs/POs         CO3       The students have the knowledge on keep the data in secure manner in the network usin network security technologies.         Mapping of Course Outcomes with Program Outcomes (POs)       COs/POs         CO3       Th H       H       H       H       H       H         CO3       H       H       H       H       H       H       H       H         CO4       PS PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11       PO12         CO3       H       H <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Ту</td><td></td><td></td><td></td><td>/0</td><td>3</td></td<>									Ту				/0	3
OBJECTIVES:       • To learn the computer forensic fundamentals         • To learn the computer forensic fundamentals         • To understand various types of cyber crime activities involved in the digital world         • To study various network security technologies to prevent the data from hacker or intruder         COURSE OUTCOMES (COS): (3-5)         CO1       Students understood how to protect the data or how to secure their personal and official data in their computer.         CO2       The students have the knowledge on keep the data in secure manner in the network usin network security technologies.         Mapping of Course Outcomes with Program Outcomes (POs)       • Toos PO4         CO3       H       H       H         CO1       H       H       H       H         CO3       H       H       H       H       H         CO3       H       H       H       H       H       H         CO3       H       H       H       H       H       H       H         CO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11       PO12         CO4       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H<								: Projec	ct R:I	Resea	arch C:	Credits		
<ul> <li>To learn the computer forensic fundamentals</li> <li>To understand various types of cyber crime activities involved in the digital world</li> <li>To study various network security technologies to prevent the data from hacker or intruder</li> <li>COURSE OUTCOMES (COs) : (3-5)</li> <li>CO1</li> <li>Students understood how to protect the data or how to secure their personal and official data in their computer.</li> <li>CO2</li> <li>The students have the awareness on digital forensics frauds</li> <li>CO3</li> <li>The students have the knowledge on keep the data in secure manner in the network usin network security technologies.</li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>CO5/POS</li> <li>PO1</li> <li>PO2</li> <li>PO3</li> <li>PO4</li> <li>PO5</li> <li>PO6</li> <li>PO7</li> <li>PO8</li> <li>PO9</li> <li>PO10</li> <li>PO11</li> <li>PO12</li> <li>CO1</li> <li>H</li> <li>H<td></td><td></td><td>y/Lab/E</td><td>mbedde</td><td>ed Theo</td><td>ory and</td><td>Lab</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></li></ul>			y/Lab/E	mbedde	ed Theo	ory and	Lab							
<ul> <li>To understand various types of cyber crime activities involved in the digital world</li> <li>To study various network security technologies to prevent the data from hacker or intruder</li> <li>COURSE OUTCOMES (COs) : (3 - 5)</li> <li>CO1</li> <li>Students understood how to protect the data or how to secure their personal and official data in their computer.</li> <li>CO2</li> <li>The students have the awareness on digital forensics frauds</li> <li>CO3</li> <li>The students have the knowledge on keep the data in secure manner in the network usin network security technologies.</li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>CO5/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12</li> <li>CO1</li> <li>H H H H H H H H H H H H H H M H H</li> <li>CO3</li> <li>H H H H H H H H H H H H H H H H H H</li> <li>CO3</li> <li>CO1 PSO1 PSO2 PSO3 PSO4 PSO5 PSO6</li> <li>PSO5 PSO5</li> <li>PSO6</li> <li>PSO1 PSO2 PSO3 PSO4 PSO5 PSO6</li> </ul>	OBJECTIV	ES :												
<ul> <li>To study various network security technologies to prevent the data from hacker or intruder</li> <li>COURSE OUTCOMES (COs) : (3-5)</li> <li>CO1 Students understood how to protect the data or how to secure their personal and official data in their computer.</li> <li>CO2 The students have the awareness on digital forensics frauds</li> <li>CO3 The students have the knowledge on keep the data in secure manner in the network usin network security technologies.</li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>COs/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12</li> <li>CO1 H H H L H H H H H H H H H H H M H H</li> <li>CO3 H H H H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H H H</li> <li>CO3 H H H H M H H H H H H H H H H H</li> <li>CO2 H H H H M H H H H H H H H H H</li> <li>CO3 H H H H H M H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H H H</li> <li>CO3 H H H H H H H H H H H H H H H H H H H</li></ul>														
COURSE OUTCOMES (COs) : (3 - 5)         CO1       Students understood how to protect the data or how to secure their personal and official data in their computer.         CO2       The students have the awareness on digital forensics frauds         CO3       The students have the knowledge on keep the data in secure manner in the network usin network security technologies.         Mapping of Course Outcomes with Program Outcomes (POS)       PO10       PO11       PO12       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11       PO12         CO1       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H	• To u	ndersta	nd vari	ous type	es of cy	ber cri	me activ	vities ir	nvolved	l in tl	he digi	tal world	l	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	To st	udy va	rious ne	etwork	security	techno	ologies	to prev	ent the	data	from l	nacker or	intrude	•
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	COURSE O	UTCO	MES (	COs):	(3-5)									
CO2       The students have the awareness on digital forensics frauds         CO3       The students have the knowledge on keep the data in secure manner in the network usin network security technologies.         Mapping of Course Outcomes with Program Outcomes (POs)       COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11       PO12         COs/POS       PO1       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H	CO1	S	tudents	underst	tood ho	w to pr	otect th	e data (	or how	to se	cure tl	heir perso	onal and	official
CO3       The students have the knowledge on keep the data in secure manner in the network usin network security technologies.         Mapping of Course Outcomes with Program Outcomes (POs)       COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11       PO12         COs/POs       PO1       H       H       H       L       H       H       L       M       M       H       H         CO2       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H <td></td> <td>d</td> <td>ata in th</td> <td>eir con</td> <td>nputer.</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td>		d	ata in th	eir con	nputer.	-						-		
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	CO2	Т	he stud	ents hav	ve the a	warene	ss on d	igital fo	orensic	s frau	ıds			
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	CO3											the netw	ork using	
$ \begin{array}{ c c c c c c c c } \hline COs/POs & PO1 & PO2 & PO3 & PO4 & PO5 & PO6 & PO7 & PO8 & PO9 & PO10 & PO11 & PO12 \\ \hline COs/POs & PO1 & H & H & H & L & H & H & H & L & M & M & H & H \\ \hline CO1 & H & H & H & H & H & H & H & H & H & $		n	etwork	security	techno	ologies.	-	-						-
CO1     H     H     L     H     H     H     L     M     M     H     H       CO2     H     H     H     M     H     H     H     H     H     CO2       CO3     H     H     H     H     H     H     H     H     H     H       CO3     H     H     H     H     H     H     H     H     H       CO3     H     H     H     H     H     H     H     H     H       CO3     H     H     H     H     H     H     H     H     H       CO4     PSO1     PSO2     PSO3     PSO4     PSO5     PSO6       PSO3     H     H     H     H     H     H     H       C01     H     H     H     M     H     H     H       C03     H     H     H     H     H     H     H       H/M/L indicates Strength of Correlation     H     H     H     H     H       Solft Skills     Solft Skills     Internshibs / Lechnical     Internshibs / Lechnical     Internshibs / Lechnical	Mapping of													
CO2       H       H       H       M       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       Loc       Loc </td <td>COs/POs</td> <td><b>PO1</b></td> <td>PO2</td> <td>PO3</td> <td>PO4</td> <td>PO5</td> <td>PO6</td> <td><b>PO7</b></td> <td>PO8</td> <td>]</td> <td>PO9</td> <td><b>PO10</b></td> <td>PO11</td> <td>PO12</td>	COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	]	PO9	<b>PO10</b>	PO11	PO12
CO3     H     H     H     H     H     H     H     H     M     H     M     H     H       COs / PSOs     PSO1     PSO2     PSO3     PSO4     PSO5     PSO6       CO1     H     H     H     M     H     H     H     H       CO1     H     H     M     H     H     H     H     H       CO2     H     H     M     H     H     H     H       CO3     H     H     M     H     H     H     H       CO3     H     Oben Electives     Sciences     Sciences     Sciences     Sciences       Volt Skills     N     H     H     H     H     H       Volt Skills     Internships / Lectives     Internships / Lectives     Internships / Lectives     Internships / Lectives       Soft Skills     Soft Skills     Internships / Lectives     Internships / Lectives     Internships / Lectives     Internships / Lectives	CO1	Η	H	Н	L	Η	Н	Н	L		Μ	Μ	Η	Н
COs / PSOs       PSO1       PSO2       PSO3       PSO4       PSO5       PSO6         C01       H       H       M       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       J       J       J       J       J       J       J       J       J       J       J	CO2	Η	H	Н	Μ	Η	Н	Н	H		Η	Μ	Η	Н
PSOs       Category         CO1       H       H       M       H         H/munities       H       M       H       H         CO2       H       H       M       H       H         CO3       H       H       M       H       H         CO3       H       H       M       H       H         H/M/L indicates       Strength       Social	CO3	Н	Н	Н	Η	Н	Н	Н	Μ		Η	Μ	Н	Н
Category       Category         Engineering Sciences       Engineering Sciences         Humanities and Sciences       Humanities and Sciences         H/M/T indicates Strength of Core       H- High, M- Medium, T-rom         Program Electives       H         Program Core       H         Nopen Electives       Holder         Soft Skills       Nopen Electives         Soft Skills       Nopen Electives	COs /	PS	01	PS	02	PS	03	Р	SO4		PS	05	Р	<b>SO6</b>
CO2       H       H       M       H       H         Engineering Sciences       Engineering Sciences       H/munities and Sciences       Engineering Sciences       Engineering Sciences         H/M/L indicates Strengt of Correlation       H- High, M- Medium, L-Low       H       H       H         Program Electives       Program Core       Program Core       Internships / Technical Skills       Soft Skills       Soft Skills	PSOs													
CO3     H     H     M     H     KO3       Engineering Sciences     Engineering Sciences     Engineering Sciences     Engineering Sciences     Engineering Sciences       Program Core     Program Core     N- Medim, T-rechnical Skill     Internships / Technical Skills     Internships / Technical Skills	CO1	]	H	I	I	N	Л		Η		]	H		H
Category       Category         Basic Sciences       Engineering Sciences         Engineering Sciences       Engineering Sciences         Program Core       Social         Program Core       Social         Program Electives       Program Core         Soft Skills       Soft Skills	CO2	]	H	I	I	N	Л		Η		]	H		H
Category Basic Sciences Engineering Sciences Humanities and Social Sciences Program Electives Program Electives Open Electives Practical / Project Internships / Technical Skill Soft Skills	CO3	J	H	I	I	N	Л		H		]	H		H
	H/M/L indic	ates St	trength	of Cor	relatio	n H-	High, I	M- Me	dium,	L-Lo	W			
	Category	Sciences	neering Sciences	anities and Social nces	ram Core	gram Electives	n Electives	tical / Project	rnships / Technical Skill		Skills			



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E15	CYBER FORENSICS AND INTERNET SECURITY	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- To learn the computer forensic fundamentals
- To understand various types of cyber crime activities involved in the digital world
- To study various network security technologies to prevent the data from hacker or intruder

#### **Cyber Forensics Fundamentals** UNIT I

Introduction to Cyber forensics: Information Security Investigations, Corporate Cyber Forensics, Scientific method in forensic analysis, investigating large scale Data breach cases. Analyzing Malicious software.

#### **UNIT II Computer Forensics Technology**

Types of Computer Forensics Technology, Types of Military Computer Forensic Technology, Types of Law Enforcement: Computer Forensic Technology, Types of Business Computer Forensic Technology, Specialized Forensics Techniques, Hidden Data and How to Find It, Spyware and Adware, Encryption Methods and Vulnerabilities, Protecting Data from Being Compromised Internet Tracing Methods, Security and Wireless Technologies, Avoiding Pitfalls with Firewalls Biometric Security Systems

#### **Computer Forensics Systems UNIT III**

Internet Security Systems, Intrusion Detection Systems, Firewall Security Systems, Storage Area Network Security Systems, Network Disaster Recovery Systems, Public Key Infrastructure Systems, Wireless Network Security Systems, Satellite Encryption Security Systems, Instant Messaging (IM) Security Systems, Net Privacy Systems, Identity Management Security Systems, Identity Theft, Biometric Security Systems

### **UNIT IV Network Security Techniques**

Network Security Applications, Authentication Mechanisms: Passwords, Cryptographic authentication protocol, Smart Card, Biometrics, Digital Signatures and seals, Kerberos, X.509 LDAP, Directory. Web Security: SSL Encryption, TLS, SET 9 Hrs

#### **UNIT V Case Study**

E-mail Security, Pretty Good Privacy (PGPs) / MIME, IP Security, Access and System Security, Intruders, Intrusion Detection and Prevention, Firewall, Hardware Firewall, Software Firewall, Application Firewall, Packet Filtering., Packet Analysis, Proxy Servers, Firewall setting in Proxy, ACL in Proxy.

### **Total Hours: 45**

### **TEXT BOOKS:**

1. John R. Vacca, (2005) Computer Forensics: Computer Crime Scene Investigation, 2nd Edition, Charles River Media.

2.Man Young Rhee, (2003) "Internet SecurityCryptographic Principles, Algorithms and Protocols", WILEY.

### **REFERENCE BOOKS:**

- 1. William Stallings, "Cryptography and Network Security: Principles and Standards", Prentice Hall India, 3rd Edition, 2003
- 2. Computer Forensics: Investigating Network Intrusions and Cyber Crime (Ec-Council Press Series: Computer Forensics), 2010
- 3. Christof Paar, Jan Pelzl, Understanding Cryptography: A Textbook for Students and Practitioners, 2nd Edition, Springers, 2010.

### 9 Hrs

9 Hrs

9 Hrs



					20	)18 Reg	gulation	<u>n</u>					
Subject Cod BCS18E16	e:	Su	bject N DAT		E SEC	URITY	Y	Ty/ Lb/ ET L	L	T/ S.Lr	. <b>P</b> /1	R	С
		Pre	erequisi	te: BC	<b>S1800</b> 4	1		Ty	3	0/0	0/	)	3
L : Lecture	Γ: Tutor						P : Proj	ect R :					0
Ty/Lb/ETL	: Theory	Lab/	Embedo	led The	eory an	d Lab	-						
	provide a												
	lerstand t				vulner	abilitie	S						
• Lean	rn to aud				<u> </u>								
						face	iter and	anabitaa					
CO1							•	architec					
CO2						-	-	g system	s from a	a databa	ase pers	pective	
CO3	To lear	n secu	urity po	licies a	nd tech	nniques	•						
CO4	To und	erstar	nd the v	arious	databas	se secur	rity moo	dels and	their ac	lvantag	es.		
Mapping of Course Outcomes with Program Outcomes (POs)													
COs/PC	Ds	PO 1	PO 2	PO 3	РО 4	PO 5	PO 6	<b>PO7</b>	PO 8	PO9	PO1 0	PO1 1	PO1 2
C01		H	M	L	L	L	H	Н	M	Н	M	H	L
CO2		Н	Н	Μ	Н	H	Н	Μ	Μ	Н	Μ	Н	Μ
CO3		H	Н	Н	Н	Μ	Μ	М	М	Н	Μ	Н	М
CO4		H	Н	Μ	L	Μ	Μ	Μ	Μ	Н	Μ	Н	Μ
COs / PSOs	;	PS	01	PS	02	PS	03	PS	04	PS	05	PS	506
C01		I	I	I	I	I	5	Ν	1	l	H	]	H
CO2		I	I	I	I	I	I	N	1	]	H	]	H
CO3		I	I	I	I	N	Л	N	1	J	H	]	I
CO4		I	I	I	I	N	ſ	I	4	J	H	I	Л
H/M/L indi	L indicates Strength of Correlation H- High, M- Medium, L-Low												
						ş		t t	_				
Category	- 5 -	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			
						$\checkmark$							



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E16	DATABASE SECURITY	Ту	3	0/0	0/0	3

### **OBJECTIVE:**

- To provide a foundation in database security •
- Understand the various database vulnerabilities
- Learn to audit the databases. •

UNIT I Security Architecture & Operating System Security Fundamentals 9 Hrs Security Architecture: Introduction-Information Systems- Database Management Systems-Information Security Architecture- Database Security-Asset Types and value-Security Methods Operating System Security Fundamentals: Introduction-Operating System Overview-Security Environment - Components-Authentication Methods-User Administration-Password Policies-Vulnerabilities-E-mail Security.

#### UNIT II Administration of Users, Profiles, Password Policies, Privileges and Roles 9 Hrs

Administration of Users: Introduction-Authentication-Creating Users, SQL Server User-Removing, Modifying Users-Default, Remote Users-Database Links-Linked Servers-Remote Servers-Practices for Administrators and Managers-Best Practices Profiles, Password Policies, Privileges and Roles: Introduction-Defining and Using Profiles-Designing and Implementing Password Policies-Granting and Revoking User Privileges-Creating, Assigning and Revoking User Roles-Best Practices.

### UNIT III **Database Application Security Models**

Introduction-Types of Users-Security Models: Access Matrix model, Access mode model- Application Types: Client/Server Applications, Web Applications, Data ware house applications- Application Security Models-Data Encryption.

### **UNIT IV** Virtual Private Databases

Virtual Private Databases: Introduction-Overview of VPD-Implementation of VPD using Views, Application Context in Oracle-Implementing Oracle VPD-Viewing VPD Policies and Application contexts using Data Dictionary, Policy Manager Implementing Row and Column level Security with SQL Server.

### Security and Auditing Project Cases UNIT V

Case Studies : Developing an online database, payroll management, tracking database changes, developing a secured authorization repository.

### **TEXT BOOK:**

1. Hassan A. Afyouni, 2009 "Database Security and Auditing", Third Edition, Cengage Learning.

### **REFERENCE BOOKS:**

- 1. Charu C. Aggarwal, Philip S Yu, 2008, "Privacy Preserving Data Mining": Models and Algorithms, Kluwer Academic Publishers.
- 2. Ron Ben Natan, 2005, "Implementing Database Security and Auditing", Elsevier Digital Press.

# B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

9 Hrs

### 9 Hrs

9 Hrs

### **Total Hours: 45**



		1	T		2018 R	egulai	1011					D/	
Subject Code:	Si	ibject N					TION		Ty/		Т/	<b>P</b> /	С
BCS18E17		MA	NAGE		<b>FINF(</b>	JRMA	TION		Lb/		S.Lr	R	
				SYS	TEMS				ET				
									L				
	Pr	rerequis	ite: BO	CS1800	)4				Ту	3	0/0	0/0	3
L : Lecture T : Tu							roject ]	R : Re	esearc	h C: C	redits		
Ty/Lb/ETL : The	ory/Lal	o/Embe	dded T	heory	and La	b							
<b>OBJECTIVES</b> :													
					bes of in	nforma	tion sy	stems	in a b	ousines	s enviro	nment a	and
		nship to											
				nternet	and Int	ernet t	echnolo	ogy of	n busi	ness el	ectronic	comme	erce and
		usiness;											
								g and u	using	inform	ation sy	stems a	nd learn
	w to find appropriate solutions to those challenges												
	OUTCOMES (COs) : ( 3- 5)												
CO1	Describe the role of information technology a												
CO2	Record the current issues of information tech firm						chnol	logy a	nd rela	ate those	issues	to the	
				1.	1 1	1	C		1.	• 1	1.4	1.4	
CO3						edge of	r conce	pts an	d tern	ninolo	gy relate	d to	
Manning of Com		nforma											
Mapping of Cou COs/POs	PO1	PO	PO	PO	PO	PO	PO	PO		PO9	PO1	PO1	PO1
COS/POS	PUI	2	<b>PO</b> 3	4	FO 5	РО 6	PO 7	PU	)	PU9	0	1	2
C01	Н	M	M	L	L	L	L	Μ		L	M	L	L
CO2	H	H	L	H	M	L	L	M		L	M	L	L
CO3	H	M	M	L	L	L	L	M		L	M	L	L
COs / PSOs		501		02		03		PSO4			<b>SO</b> 5		<b>SO6</b>
CO1	Н		Μ		L		Μ			L		L	
CO2	Н		L		L		L			L		L	
CO3	Η		Μ		L		Μ			L		L	
H/M/L indicates	Streng	gth of (	Correla	tion	H- Hig	gh, M-	Mediu		-Low				
								Skill					
			Ξ					1 S]					
		ses	Social					ical					
>		enc	Sc		es		5	,hn					
Lio	$\mathbf{s}$	Scie	pu	()	tiv	es	oje(	Tec					
	4)			2	20	<u>.</u>	Ĕ						
iteg	nce	50	S.	Ę	Ē	-12	щ	~					
Category	cience	ering 2	ities a	n Coi	n El	lecti	al / F	nips	ills				
Categ	c Science	ineering 5	nanities a	ram Co	ram El	n Electi	tical / F	sqihsn:	Skills				
Categ	asic Science	ngineering 9	lumanities a ciences	rogram Co	rogram El	pen Electi	ractical / F	ıternships	oft Skills				
Categ	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technic	Soft Skills				



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С	
BCS18E17	MANAGEMENT INFORMATION SYSTEMS	Ту	3	0/0	0/0	3	

### **OBJECTIVES:**

- Evaluate the role of the major types of information systems in a business environment and their relationship to each other;
- Assess the impact of the Internet and Internet technology on business electronic commerce and electronic business;
- Identify the major management challenges to building and using information systems and learn how to find appropriate solutions to those challenges

### UNIT I Organizations, Management and The Networked Enterprise

Information Systems in Global Business- Global E-Business-Information Systems-Strategy Systems-Ethical and Social issues in Information System - Analyzing Business Resource for an Enterprise System.

### UNIT II IT Infrastructure

IT infrastructure- Emerging Technology - Business Intelligence: Databases and Information Management – Telecommunication - Internet and Wireless Technology - Information Security Systems

### UNIT III Key System Application For The Digital Age

Enterprise application- Ecommerce-Digital Markets- Digital Goods- Managing knowledge- Decision Making – Enterprise portal design

### UNIT IV Building and Managing Systems

Building Systems - Project Management- Establishing Business values - Managing Change - Managing Global System - Redesigning Business Processes- Case studies

### UNIT V Advanced Concepts In Information System

Enterprise Resource Planning - modules : Human Resources, Finance – Accounting - Production & Logistics - Supply Chain Management – CRM - Procurement - Management System Object Oriented modeling- case studies

### TEXT BOOKS :

- 1. James A, O' Brian, (2007) Management information systems ,(7th ed.), TMH Publisher
- 2. Kenneth C. Laudon, Jane P.(2008) Management Information Systems: Managing the Digital Firms Pearson Education, TMH, 2008.

### **REFERENCE BOOKS:**

- 1. James A. O'Brien, Northern Arizona University, George M. Marakas, University of Kansas, (2007) Introduction to Information Systems
- 2. Ross and Clagget (2004) Information System for Modern Management, Prentice-Hall of India Pvt. Ltd.
- 3. Alexis Leon, (2007) Enterprise Resource Planning, TMH

### 9 Hrs

9 Hrs

9 Hrs

9 Hrs

### 9 Hrs

### **Total Hours: 45**

### . ...



### 7th SEMESTER ELECTIVES E-III (Common to CSE&IT)

Subject Code BCS18E18	e: Su	U	bject Name : DATA SCIENCE AND BIG DATA ANALYTICS requisite: BCS18004 Ty 3 0										С
		1							Ту	3	0/0	0/0	3
L : Lecture 7							: Projec	ct R:l	Researc	ch C	Credits		
Ty/Lb/ETL :		y/Lab/I	Embedd	led The	ory and	Lab							
OBJECTIV		1				. 11							
·	• •		•		•		ess big		alytics	proj	lects		
	•			•		•	challen	0	1 · 1				1 1
									big da	ta, c	reate stati	istical m	odels,
	-	-					ole resul		databa	0.00	olution W	indow	nd
		nctions		i KStud	no, maj	Reduc	e/ nauo	op, m-	Jatabas	se an	alytics,W	maow a	na
COURSE O				(3-5)									
					ecycle	to addr	ess big	data an	alvtice	nroi	ects		
-			•		•		-		arytics	proj	cets		
							challeng		big do	to c	reate stati	ation m	adala
			ts that c					maryze	big da	ia, ci	leale stati	sucar mo	Juels,
	-							licatio	ne and	1 oth	er advand	ed topic	s if time
perm		the nex	t genera		oig uai	<i>a</i> 10015	and app	Jincan	115, and	1 Oth		cu topic	s ii tiile
Mapping of		e Outc	omes w	vith Pro	ogram (	Outcon	nes (Po	s)					
Cos/Pos	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	<b>PO8</b>	PO	9	<b>PO10</b>	PO11	PO12
CO1	H	Η	Н	Μ	Η	Η	Η	Μ	H		Μ	H	H
CO2	Н	Н	Μ	Н	Н	Н	Н	L	Н		Μ	H	Μ
CO3	Н	Н	Н	Н	Μ	Μ	Η	Μ	H		L	Η	Н
CO4	H	Η	Η	Η	Μ	Н	L	Η	Η		Н	Η	Η
Cos /	PS	01	PS	02	PS	03	PS	<b>504</b>		PS	05	P	SO6
PSOs													
CO1	Η		Η		Η		Μ		L			Η	
CO2	H		Η		Η		Μ		H			H	
CO3	H		Η		Μ		H		H			Μ	
CO4	Η		Η		Н		Μ		H			H	
H/M/L indi	cates S	trengtl		rrelatio	<u>n H-</u>		M- Me			7			
Category	Basic Sciences	Engineering Sciences	Humanities and Social	Sciences Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills Special elective				
					<b>~</b>								



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/	L	T/ S.Lr	P/R	С
BCS18E18	DATA SCIENCE AND BIG DATA ANALYTICS	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- Deploying the Data Analytics Lifecycle to address big data analytics projects
- Reframing a business challenge as an analytics challenge
- Applying appropriate analytic techniques and tools to analyze big data, create statistical models, and identify insights that can lead to actionable result
- Using tools such as: R and RStudio, MapReduce/Hadoop, in-database analytics, Window and MADlib functions. UNIT I Introduction

### 9 Hrs

Big data overview - State of the practice in analytics, BI vs data science, current analytical architecture, drivers of big data - Big data ecosystem - **Data analytics lifecycle -** overview – Discovery Phase - Data preparation Phase - Model Planning Phase - Model building Phase - Communicate results Phase - Operationalisation Phase.

### UNIT II Basic Data Analytic Methods Using R

Introduction to R, R Graphical User interfaces, Data import and export, Attribute and data types, descriptive statistics - Exploratory data analysis, visualization data analysis, dirty data, visualizing a single variable, examining multiple variables, data exploration vs presentation, - Statistical methods for evaluation, Hypothesis testing, Difference of Means, Wilcoxon Rank-sum test, Type I and II errors, power and sample size, ANOVA

### UNIT III Advanced Analytical Theory & Methods (Clustering, Association Rules And Regression) 9 Hrs

Clustering- k-means, use cases, determining the number of clusters, diagnostics, Reasons to choose and cautions, additional algorithms - Association rules- Apriori algorithm, Evaluation of candidate rules, Application of association rules, an example- transactions in a grocery store, the groceries dataset, frequent itemset generation, rule generation and visualization, validation and testing, diagnostics - Regression-linear and logistic regression, usecases, model description, diagnostics – Additional Regression Models

### UNIT IV Advanced Analytical Theory & Methods (Classification, Time Series Analysis And Text Analysis) 9 Hrs

Classification - Decision Trees, general algorithm, evaluating a decision tree, Decision trees in R - Naive Bayes - Bayes theorem, Naive Bayes classifier, Smoothing, diagnostics, Additional Classification Methods - Time Series Analysis- Box-Jenkins Methodology, ARIMA Model, Auto correlation Function(ACF), Auto regressive models, moving average models, ARMA and ARIMA Models, building and evaluating a ARIMA Model - Text Analysis- collecting raw text, representing text, term frequency-Inverse document frequency(TFIDF), Categorizing documents by topics, determining sentiments, gaining insights

### UNIT V Advanced Analytics-Technology and Tools: Mapreduce and Hadoop

Analytics for unstructured data, usecases, Mapreduce, Apache Hadoop - **The Hadoop Ecosystem -** Pig, Hive, HBase, Mahout, NoSQL - **In-database analytics** - SQL Essentials, Joins, Set operations, Grouping extensions, In-Database text analytics, Advanced SQL, Window functions, User-defined functions and aggregates, Ordered Aggregates, MADlib.

### **TEXT BOOK:**

1. <u>EMC Education Services</u> (Editor), 2015 Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, Wiley Publications, ISBN: 978-1-118-87613-8

### 9 Hrs

### **Total Hours: 45**



adu, India.

### DEPARTMENT OF INFORMATION TECHNOLOGY

Subject Cod	le: Su	bject N				o Kegu		Ty/	L	Τ/	P/R	С	
BCS18E19		N	ETWO	RK FC	ORENS	ICS		Lb/ ETL		S.Lr			
	Pre	erequisi	te: BIT1	8I01				Ту	3	0/0	0/0	3	
L : Lecture							Projec	ct R : Re	esearch	C: Credit	S		
Ty/Lb/ETL		y/Lab/I	Embedde	ed Theo	ory and	Lab							
OBJECTIV						<b>C</b>	1.0						
										rinciples work secu	urity techno	ologies.	
COURSE (	OUTCO	OMES (	( <b>COs</b> ) :	( 3- 5)									
CO1 Le	arn to ic	lentify	network	securit	y incide	ents and	l poten	tial sour	ces of d	igital evid	dence.		
			-	-	m basic	e netwo	rk data	acquisit	ion and	analysis	using com	outer	
			s and uti				6	. 1.0	•	1 1	•		
							n of ne	twork fo	prensic t	echnolog	ies		
CO4       Apply tools for network forensic investigation         Mapping of Course Outcomes with Program Outcomes (POs)													
Mapping of	f Cours		omes wi	ith Pro	gram (	Jutcom	es (PO	s)					
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	<b>PO7</b>	PO8	PO9	PO9 PO10		PO12	
CO1	H	H	L	Н	L	H	Η	Μ	H	Μ	Н	Μ	
CO2	Н	Н	Н	Н	Н	Μ	Μ	Μ	Н	Μ	Н	M	
CO3	Н	Н	Н	Н	Н	Μ	Μ	Μ	H	M	H	L	
CO4	H	H	Н	H	H	Μ	Μ	H	M	Μ	Н	Н	
COs / PSOs	PS	01	PS	02	PS	03	PS	<b>SO4</b>	I	PSO5	P	506	
CO1	I	H	H	[	J	Ĺ	-	Μ		Η		H	
CO2	I	Ι	H	I	N	Л		Μ		Н		H	
CO3	I	H	H	[	J	Ĺ		Μ		Η		H	
CO4	I	Η	H	[	N	A		H		Н		H	
H/M/L indi	icates S	trengtl	n of Cor	relatio	n H-	High, I	M- Me	dium, L	-Low		·		
					SS		it	11					
	S		nd Ses		tive	SS	ojec	os/ Skil					
	nce	Зg	ienci	Core	Ilec	tive	Pro	shij Sal 3					
ory	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	mE	Open Electives	Practical / Project	Internships / Technical Skill	dills				
Category	iic (	Engineer Sciences	mar ial	gra	gra	en E	ctic	Int	t Sk				
Ca	Bas	En£ Sci(	Hui Soc	Pro	Program Electives	Opé	Pra		Soft Skills				
						_							
					•								



SUBJECT CODE	SUBJECT NAME	Ty / Lb	L	T/ S.Lr	P/R	С
BCS18E19	NETWORK FORENSICS	Ту	3	0/0	0/0	3

### **OBJECTIVE:**

- Provide a comprehensive understanding of network forensic analysis principles
- Understand the relationship between network forensic analysis and network security technologies. •

#### UNIT I **Technical Fundamentals**

Concepts in digital evidence- challenges- investigative methodology- sources of network based evidenceprinciples of internetworking-Internet Protocol suite- Evidence acquisition

#### **UNIT II Packet and Statistical Flow Analysis**

Packet analysis - protocol analysis - flow analysis- higher layer traffic analysis - Statistical Flow analysis:sensors-flow record export protocols- collection and aggregation- analysis tools and techniques - Case study and Tools Analysis: Wire Shark

#### UNIT III **Network Intrusion Detection and Analysis**

NIDS/NIPS functionality- modes of detection-types-NIDS/NIPS evidence acquisition -NIPS/NIDS interfaces -packet logging - Case study and Tools Analysis : Snort

### **UNIT IV Network Devices and Servers**

Sources of Logs-Network log architecture- collecting and analyzing evidence- Switches- routers firewalls-interfaces-logging - Case study and Tools Analysis: Angry IP Scanner

### UNIT V **Network Tunnelling and Case Studies**

Tunneling for functionality, confidentiality- covert tunneling- trends in malware evolution-network behavior of malware - future of malware and network forensics - Case study and Tools Analysis : Cuckoo Sandbox

### **TEXT BOOK:**

1. Network Forensics : Tracking Hackers Through CyberSpace Sherri Davidoff, Jonathan Ham Pearson Education 2012

### **REFERENCE BOOKS:**

- 1. Introduction to Security and Network ForensicsWilliam J. Buchanan Auerbach Publications 2012
- 2. Handbook of Digital Forensics and Investigations, 1st Edition Eoghan Casey ed., Elsevier Academic Press, ISBN 13: 978-0-12-374267-4,.

### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

## 9 Hrs

9 Hrs

## 9 Hrs

### 9 Hrs

### **Total Hours: 45**



2018 Regu		т	<b>T</b> /	D/D										
Subject Code: Subject Name : INTERNET OF THINGS	Ty/	L	T/	P/R	C									
BCS18E20	Lb/		S.Lr											
DCS18E20	ET													
	L													
Prerequisite: NIL	Ту	3	0/0	0/0	3									
L: Lecture T: Tutorial S.Lr: Supervised Learning P:	Project R : R	esearc	h C: Cree	dits										
Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab														
<b>OBJECTIVES :</b>														
<ul> <li>Vision and introduction to IoT</li> </ul>														
• Data knowledge management and use of devices	in IoT Techno	ology												
• Understand the state of Art – Iot Architecture														
• Real world Iot Design constraints, industrial automation and commercial building automation in IoT														
COURSE OUTCOMES (COs) : ( 3- 5)														
CO1 Understand the vision of IoT from a g	lobal context.													
CO2 Determine the Market perspective of I														
CO3 Use of Devices, Gateways and Data M		IoT												
CO4 Understand the Application of IoT in			nercial B	uilding A	utomation									
and Real World Design Constraints				0										
	g of Course Outcomes with Program Outcomes (POs)													
COs/POs PO1 PO2 PO3 PO4 PO5 PO6		B PC	<b>D9 P</b> (	D10 PC	D11 PO12									
CO1 M M M M M M	L L	H			Н									
CO2 M M H H L	<u> </u>	H			H									
CO3 H H H H H H	H M	Н			Μ									
CO4 H H H H H H	H M	Н		Н	Н									
COs/ PSO1 PSO2 PSO3	PSO4		PSO5		PSO6									
PSOs														
CO1 H M L	Μ		Н		L									
CO2 H H M	Н		Μ		Н									
CO3 M H H	Н		Μ		Н									
CO4 H H L	Н		Н		Н									
	I- Medium, L	-Low												
	Skill													
ss sial	cal													
	jui t													
s ciences d Social ives	ject echni		e e											
egory cees g Science and Soc bre ectives	roject / Techni		ctive											
Category iences ing Science ies and Soc Electives Electives	l/Project ips/Techni	][0	llective											
Category Sciences leering Science unities and Soc ces am Core am Electives Electives	cal / Project ships / Techni	elli-11	al Elective											
Category sic Sciences gineering Science imanities and Soc iences ogram Core ogram Electives en Electives	actical / Project ernships / Techni	ft Shille	ecial Elective											
Category Basic Sciences Engineering Sciences Humanities and Socié Sciences Program Core Program Electives Open Electives	Practical / Project Internships / Technical	Soft Skille	Special Elective	4										



### **2018 Regulation**

SUBJECT CODE	SUBJECT NAME	Ty / Lb	L	T/ S.Lr	P/R	С
BCS18E20	INTERNET OF THINGS	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- Vision and introduction to IoT
- Data knowledge management and use of devices in IoT Technology
- Understand the state of Art Iot Architecture
- Real world Iot Design constraints, industrial automation and commercial building automation in IoT

#### **UNIT I Introduction To IoT**

Definition - characteristics of IoT-Physical Design of IoT - Logical Design of IoT- IoT enabling technologies - IoT Levels and Deployment Templates

#### UNIT II IoT and M2M

M2M to IoT - A Basic Perspective- Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.

M2M to IoT-An Architectural Overview- Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

#### **IoT Platforms Design Methodology** UNIT III

Introduction – IoT Design Methodoloy – Case study on IoT system for Weather Monitoring – Motivation of using Python

#### **IoT Physical Devices and Endpoints UNIT IV**

IoT Device - Basic building blocks of an IoT Device - Exemplary Device: Raspberry Pi - Linux on Raspberry Pi – Raspberry Pi Interfaces – Raspberry Pi with Python – Simple Programs

#### UNIT V **IoT Applications For Value Creations**

Introduction, IoT applications for industry: Future Factory Concepts, Brownfield IoT, Smart Objects, Smart Applications, Four Aspects in your Business to Master IoT, Value Creation from Big Data and Serialization, IoT for Retailing Industry, IoT For Oil and Gas Industry, Opinions on IoT Application and Value for Industry, Home Management, eHealth. Case Studies Illustrating to IoT Design.

### **TEXT BOOK:**

1. Vijay Madisetti and Arshdeep Bahga, 2015"Internet of Things (A Hands-on-Approach)", **Universities** Press

### **REFERENCE BOOKS:**

- 1. Francis daCosta, 2013 "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, A press Publications
- 2. Cuno Pfister, Getting Started with the Internet of Things, O"Reilly Media, 2011, ISBN: 978-1-4493-9357-1

# 9 Hrs

9 Hrs

### 9 Hrs

9 Hrs

# 9 Hrs

### **Total Hours: 45**



	Code: E21	Subject Name : SOCIAL COMPUTING Prerequisite: NIL				IPUTIN	١G		Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
		Pre	erequisi	te: NIL					Ту	3	0/0	0/0	3
L : Lec	ture T : 7	Futor	rial S.	Lr : Supe	ervised	Learnin	ng P:P	roject	R : Rese	earch C	: Credits		
Ty/Lb/l				mbedded	l Theor	y and La	ab						
	<b>OBJE</b>												
•				ant featu									
•				pe new se			g syster	ns.					
•	•			ehind in s									
•				arch issu		is field	•						
				C <b>Os</b> ) : ( )									
CO1			•	•		cial and	l web b	ased co	mputing	g – focu	sing on cu	irrent Res	search
				this area.									
CO2											social me		
CO3			the use	of graph	theory	in repre	esenting	g relatio	nships i	n socia	l networks	s and dist	ributed
	systems				<u> </u>								
CO4		tand	and ma	ke use of	f specia	list tech	nologie	es used	to harve	est, anal	yse and vi	sualise "	social
	data												
CO5			e the us	e of spec	ialist p	rogramr	ning en	vironm	ents and	l tools f	or managi	ng di	stributed
	social d		<u> </u>										
	ng of Co		e Outco	mes wit	h Progi	ram ( )11							
COs/P			DOA							DOA	<b>DO10</b>	<b>DO11</b>	DOIO
		01	PO2	PO3	PO4	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PO11	PO12
CO1	H	[	Η	PO3 M	PO4 L	PO5 M	PO6 M	PO7 M	PO8 M	L	L	Μ	Μ
CO1 CO2	H H	[	H H	PO3 M M	PO4 L M	PO5 M L	PO6 M L	PO7 M M	PO8 M M	L L	L M	M M	M M
CO1 CO2 CO3	H H H	[ [ [	H H H	PO3 M M M	PO4 L M M	PO5 M L L	PO6 M L L	PO7 M M L	PO8 M M L	L L M	L M L	M M M	M M M
CO1 CO2 CO3 CO4	H H H H	[ [ [	H H H	PO3 M M M L	PO4 L M M M	PO5 M L L M	PO6 M L L M	PO7 M M L M	PO8 M M L L	L L M L	L M L L	M M M M	M M M M
CO1 CO2 CO3 CO4 CO5	H H H	[ [ [ [	H H H H H	PO3 M M L M	PO4 L M M M M	PO5 M L L M M	PO6 M L L M L	PO7 M L M L	PO8 M L L L	L L M L M	L M L L M	M M M M M	M M M M M
CO1 CO2 CO3 CO4 CO5 COs /	H H H H	[ [ [	H H H H H	PO3 M M M L	PO4 L M M M M	PO5 M L L M	PO6 M L L M L	PO7 M L M L	PO8 M M L L	L L M L M	L M L L	M M M M M	M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs	H H H H H H H	I I I PS	H H H H H	PO3 M M L M PS0	PO4 L M M M M	PO5 M L L M M PS	PO6 M L L M L	PO7 M L M L PS	PO8 M L L L	L L M L M	L M L L M	M M M M P	M M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs CO1		[ [ [ PS	H H H H H	PO3 M M L M PS0 H	PO4 L M M M M	PO5 M L M M PS M	PO6 M L L M L	PO7 M L L PS M	PO8 M L L L	L M L M P L	L M L L M	M M M M P M	M M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs CO1 CO2		[ [ [ [ PS	H H H H H	PO3 M M L M PS0 H H	PO4 L M M M M	PO5 M L M M PS M M	PO6 M L L M L	PO7 M L M L PS M L	PO8 M L L L	L L M L L L L	L M L L M	M M M M P M M	M M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs CO1 CO2 CO3	H H H H H H H H H H	[ [ [ PS [ [	H H H H H	PO3 M M L M PS0 H H H	PO4 L M M M M	PO5 M L M M PS M M M	PO6 M L L M L	PO7 M L M L PS M L M	PO8 M L L L	L M L M P L L M	L M L L M	M M M M P M M L	M M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs CO1 CO2 CO3 CO4	H H H H H H H H H H H H H	[ [ [ [ [ [ [ [	H H H H H	PO3 M M L M PS0 H H H H	PO4 L M M M M	PO5 M L M M PS M M M L	PO6 M L L M L	PO7 M L M L PS M L M L	PO8 M L L L	L M L M L L L M M	L M L L M	M M M M M M M L M	M M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs CO1 CO2 CO3 CO4 CO5	H H H H H H H H H H H H H H H H H H	[ [ [ [ [ [ [ [ [	H H H O1	PO3 M M L M PS0 H H H H H	PO4 L M M M D2	PO5 M L M M PS M M M L M	PO6 M L L M L O3	PO7 M L M L PS M L M L M	PO8 M L L L O4	L M L M P L L M M M	L M L L M	M M M M P M M L	M M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs CO1 CO2 CO3 CO4 CO5	H H H H H H H H H H H H H H H H	[ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [	H H H O1	PO3 M M L M H PS0 H H H H H H Of Corre	PO4 L M M M D2	PO5 M L M M PS M M M L M	PO6 M L L M C O3	PO7 M L M L PS M L M L M	PO8 M L L L O4	L M L M P L L M M M	L M L L M	M M M M M M M L M	M M M M M
CO1 CO2 CO3 CO4 CO5 COs / PSOs CO1 CO2 CO3 CO4 CO5 H/M/L	H H H H H H H H H H H H H H H H H H	[ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [	H H H O1	PO3 M M L M PS0 H H H H H H H Corro	PO4 L M M M D2	PO5 M L M M PS M M M L M	PO6 M L L M L O3	PO7 M L M L PS M L M L M	PO8 M L L L O4	L M L M P L L M M M	L M L L M	M M M M M M M L M	M M M M M



SUBJECT CODE	SUBJECT NAME	Ty / Lb		T/ S.Lr	P/R	С
BCS18E21	SOCIAL COMPUTING	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- Understand important features of social computing.
- Design and prototype new social computing systems.
- Analyze data left behind in social media.
- Understand the research issues in this field.

### UNIT I Basic Concepts

Web 2.0 Introduction – Advantages & Disadvantages of Web2.0 – Business Aspects of Web2.0 – Web2.0 Principles – Characteristics – design aspects – Introduction to Web services.

### UNIT II Web2.0 Services

Web2.0 Services – Applications –Communication - Blogs – Topic, Event, Marketing, Learning, Scholarly - Wiki – Wikia, Wetpaint, Pbwiki, Wikispaces -Podcasting, Vodcasting - 21st century skills - Social Networking- Social Bookmarking – RSS & Syndication –Newer Web2.0 services and Applications

### UNIT III Technology

Ajax – Alternatives to Ajax – Open APIs –SOAP –REST - Microformats – Client side technologies – Web gateway - Security Challenges with Web2.0 – Content Management System(CMS)

### UNIT IV Application Creation

DOJO toolkit - Creation of Application with DOJO, JSON ,Adobe Flex, Cloud computing, Hadoop – Building Offline Applications using Adobe AIR.

### UNIT V Case Studies

Teaching & Learning Issues – Research – Academic Publishing – Library – Repositories – Archiving – Future of Web2.0 – Web2.0 & Semantic Web – Emergence of Web Science.

### **Total Hours: 45**

### **REFERENCE BOOKS:**

- 1. shelly / Frydenberg, 2011, "Web2.0- concepts & Applications", Cengage Learning.
- 2. Gwen Solomon, Lynne Schrum, 2007, "Web 2.0 new tools, new schools", ISTE Publication.
- 3. www.jisc.ac.uk JISC Technology and Standards Watch, Feb. 2007 Web 2.0(PDF)
- 4. Web2.0 Tutorials(from web)
- 5. Mastering Web2.0 Technologies(from web)
- 6. www.dojotoolkit.org

### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

## 9 Hrs

9 Hrs

### 9 Hrs

### 9 Hrs



BCS18E22     ENTERPRISE ARCHITECTURE     L,b/ ET     S.L       Prerequisite: NIL     Ty     3     0/0     0/0     3       L : Lecture T : Tutorial     S.L : Supervised Learning P : Project R : Research C: Credits     Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab       OBJECTIVES :     •     •     •     •       •     To define and explain gaps     •     •     •     •       •     Help to achieve the business strategy, vision and Target Operating Model     •     •     •       •     Provide the flexibility to include new ideas in the future     •     •     •       •     Enable faster decision making, avoiding the need for long studies     •     •     •       •     Lam UL and BPMN Modeling.     •     •     •     •       CO1     Construct models for enterprise architecture definition which conform to industry standards and frameworks     •     •     •       CO2     Analyze alternative models for enterprise architecture components and processes for different organizations     •     •     •       CO3     Identify critical success factors for common enterprise architecture tapproaches     •     •     •       CO3     PO1     PO2     PO3     PO6     PO7     PO8     PO9     PO10     PO11	Subject Code	: Su	bject N							Ty/	L	<b>T</b> /	P/R	C		
LIPrerequisite: NILTy30/00/03L: Lecture T: TutorialS.Lr: Supervised Learning P: Project R: Research C: CreditsTy/L/ETL: Theory/Lab/Embedded Theory and LabOBJECTIVES:• To define and explain gaps• Help to achieve the business strategy, vision and Target Operating Model• Provide the flexibility to include new ideas in the future• Enable faster decision making, avoiding the need for long studies• Learn UML and BPMN Modeling.COURSE OUTCOMES (COs): (3-5)CO1Construct models for enterprise architecture definition which conform to industry standards and frameworksCO2Analyze alternative models for enterprise architecture components and processes for different organizationsCO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program Outcomes (POS)CO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program Outcomes (POS)CO3Identify Critical success factors for SPO6CO3HMHMHMHMHMHMHMHMHMHMapping of Course Outcomes with Program Outcomes (POS)CO3PSO1PSO2PSO3PSO4PSO5PSO6PSO8-CO3HHM </td <td></td> <td></td> <td>E</td> <td>NTERP</td> <td>RISE A</td> <td>RCHI</td> <td>ГЕСТІ</td> <td>JRE</td> <td></td> <td></td> <td></td> <td>S.L</td> <td></td> <td></td>			E	NTERP	RISE A	RCHI	ГЕСТІ	JRE				S.L				
Prerequisite: NILTyJ0/00/03L: Lecture T: TutorialS.L : Supervised Learning P: Project R : Research C: CreditsTy/Lb/ETL : Theory/Lab/Embedded Theory and LabOBJECTIVES :• To define and explain gaps• Help to achieve the business strategy, vision and Target Operating Model• Provide the flexibility to include new ideas in the future• Enable faster decision making, avoiding the need for long studies• Learn UML and BPMN Modeling.COURSE OUTCOMES (COS) : (3-5)CO1Construct models for enterprise architecture definition which conform to industry standards and frameworksCO2Analyze alternative models for enterprise architecture components and processes for different organizationsCO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program Outcomes (POS)CO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program Outcomes (POS)CO3HCO4HCO3HHMHHMHHMHHMHHHMapping of CourseCO2HHMHHMHHMHHMapping of Course Outcomes with Program Outcomes	BCS18E22									ET		r				
L : Lecture T : Tutorial       S.Lr : Supervised Learning P : Project R : Research C: Credits         Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab         OBJECTIVES :         • To define and explain gaps         • Help to achieve the business strategy, vision and Target Operating Model         • Provide the flexibility to include new ideas in the future         • Enable faster decision making, avoiding the need for long studies         • Learn UML and BPMN Modeling.         COURSE OUTCOMES (COs) : (3-5)         CO1       Construct models for enterprise architecture definition which conform to industry standards and frameworks         CO2       Analyze alternative models for enterprise architecture components and processes for different organizations         CO3       Identify critical success factors for common enterprise architect approaches         Mapping of Course Outcomes with Program Outcomes (POs)       COs/POs         CO3       Identify critical success factors for 2005         CO4       M       M         CO3       Identify critical success factors PO6       PO7         CO4       M       M       H         CO2       H       M       H       H         CO3       Identify critical success factors for common enterprise architect approaches       Cos/POs         CO4       PO2       PO3       PO4 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>L</td> <td></td> <td></td> <td></td> <td></td>										L						
Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab         OBJECTIVES :         • To define and explain gaps         • Help to achieve the business strategy, vision and Target Operating Model         • Provide the flexibility to include new ideas in the future         • Enable faster decision making, avoiding the need for long studies         • Learn UML and BPMN Modeling.         COURSE OUTCOMES (COs) : (3-5)         CO1         Construct models for enterprise architecture definition which conform to industry standards and frameworks         CO2         Analyze alternative models for enterprise architecture components and processes for different organizations         CO3         Identify critical success factors for common enterprise architect approaches         Mapping of Course Outcomes with Program Outcomes (POs)         COs/POS         PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO11       PO12         CO3       Identify critical success factors for common enterprise architect approaches         Mapping of Course Outcomes with Program Outcomes (POs)         COs/POS       PO1       PO1			-							•			0/0	3		
OBJECTIVES :       • To define and explain gaps         • Help to achieve the business strategy, vision and Target Operating Model         • Provide the flexibility to include new ideas in the future         • Enable faster decision making, avoiding the need for long studies         • Learn UML and BPMN Modeling.         COURSE OUTCOMES (COs) : (3-5)         CO1       Construct models for enterprise architecture definition which conform to industry standards and frameworks         CO2       Analyze alternative models for enterprise architecture components and processes for different organizations         CO3       Identify critical success factors for common enterprise architect approaches         Mapping of Course Outcomes with Program Outcomes (POs)         CO3       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO11       PO12         CO1       M       M       H       H       H       H       H       H         CO3       Identify critical success factors for common enterprise architect approaches       Mapping of Course Outcomes with Program Outcomes (POs)       Cos/POS       PO1       PO1       PO12       PO1       PO11       PO12         CO3       H       M       H       H       M       H       H       M       M       M<								Project	R : Res	earch C	: Credi	its				
• To define and explain gaps • Help to achieve the business strategy, vision and Target Operating Model • Provide the flexibility to include new ideas in the future • Enable faster decision making, avoiding the need for long studies • Learn UML and BPMN Modeling. COURSE OUTCOMES (COS) : (3 - 5) CO1 COnstruct models for enterprise architecture definition which conform to industry standards and frameworks CO2 Analyze alternative models for enterprise architecture components and processes for different organizations CO3 Identify critical success factors for common enterprise architecture approaches Mapping of Course Outcomes with Program Outcomes (POs) CO3/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 CO1 M M M H H M H H M H H M H H M H H M M H H H M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M M <			/Lab/E	mbedded	Theory	y and La	ab									
<ul> <li>Help to achieve the business strategy, vision and Target Operating Model</li> <li>Provide the flexibility to include new ideas in the future</li> <li>Enable faster decision making, avoiding the need for long studies</li> <li>Learn UML and BPMN Modeling.</li> <li>COURSE OUTCOMES (COs) : (3 - 5)</li> <li>CO1</li> <li>Construct models for enterprise architecture definition which conform to industry standards and frameworks</li> <li>CO2</li> <li>Analyze alternative models for enterprise architecture components and processes for different organizations</li> <li>CO3</li> <li>Identify critical success factors for common enterprise architect approaches</li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>CO5/POS</li> <li>PO1</li> <li>PO2</li> <li>PO3</li> <li>PO4</li> <li>PO5</li> <li>PO6</li> <li>PO7</li> <li>PO8</li> <li>PO9</li> <li>PO10</li> <li>PO11</li> <li>PO12</li> <li>CO1</li> <li>M</li> <li>M</li> <li>H</li> <li>M</li> <li>H</li> <li>M</li> <li>H</li> <li>M</li> <li>H</li> <li>M</li> <li>H</li> <li>H</li> <li>M</li> <li>H</li> /ul>																
<ul> <li>Provide the flexibility to include new ideas in the future</li> <li>Enable faster decision making, avoiding the need for long studies</li> <li>Learn UML and BPMN Modeling.</li> <li>COURSE OUTCOMES (COs) : (3-5)</li> <li>CO1 Construct models for enterprise architecture definition which conform to industry standards and frameworks</li> <li>CO2 Analyze alternative models for enterprise architecture components and processes for different organizations</li> <li>CO3 Identify critical success factors for common enterprise architect approaches</li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>CO5/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12</li> <li>CO1 M M M H M H M H H L H L M H</li> <li>CO2 H M H H M H M H H M M H H L M M</li> <li>CO3 H H H M H M H H M M H H M M H</li> <li>CO3 H H H M H M H M M H H M M M</li> <li>CO3 H H H M H M M H M M M M M</li> <li>CO2 H H M H H M M M M M M M M</li> <li>CO3 H H H M H M M H M M M M M</li> <li>CO3 H H H M H M M M M M M M M</li> <li>CO3 H H H M H M M M M M M M M</li> <li>M</li> <li>CO3 H H H M M H M M M M M M M</li> <li>M</li> <li>CO3 H H H M M M M M M M M M M</li> <li>CO3 H H H M M M M M M M M M</li> <li>M</li> <li>CO3 H H H M M M M M M M M M</li> <li>CO3 H H H M M M M M M M M</li> <li>M</li> <li>CO3 H H H M M M M M M M M</li> </ul>																
<ul> <li>Enable faster decision making, avoiding the need for long studies</li> <li>Learn UML and BPMN Modeling.</li> <li>COURSE OUTCOMES (COs) : (3 - 5)</li> <li>CO1         <ul> <li>Construct models for enterprise architecture definition which conform to industry standards and frameworks</li> </ul> </li> <li>CO2             <ul> <li>Analyze alternative models for enterprise architecture components and processes for different organizations</li> <li>CO3</li> <li>Identify critical success factors for common enterprise architect approaches</li> </ul> </li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>COs/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12</li> <li>CO1 M</li> <li>M M</li> <li>H</li> <li>M H</li> /ul>	•				•	•		•	)peratin	ig Mode	el					
• Learn UML and BPMN Modeling.         COURSE OUTCOMES (COs) : (3-5)         CO1       Construct models for enterprise architecture definition which conform to industry standards and frameworks         CO2       Analyze alternative models for enterprise architecture components and processes for different organizations         CO3       Identify critical success factors for common enterprise architect approaches         Mapping of Course Outcomes with Program Outcomes (POs)         CO3       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       PO9       PO10       PO11       PO12         CO1       M       M       H       M       H       L       H       L       M       H         CO2       H       M       H       M       H       L       H       M       H         CO3       Identify critical success factors for common enterprise architect approaches       Mapping of Course Outcomes with Program Outcomes (POs)       PO10       PO11       PO12         CO1       M       M       H       M       H       L       M       H       H       M       H       M       H       M       M       M       M       M       M       M       M       M       M				-												
COURSE OUTCOMES (COs) : (3-5)CO1Construct models for enterprise architecture definition which conform to industry standards and frameworksCO2Analyze alternative models for enterprise architecture components and processes for different organizationsCO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program Outcomes (POs)CO3PO1PO2PO3PO4PO5PO6PO7CO3PO1PO2PO3PO4CO4MMHHLCO5/PO8PO1PO2PO3PO4PO5CO5/PO8PO1PO2PO3PO4PO5PO6CO1MMHMHHCO3HHMHMHCO3HHMHMMCO3HHMHHMCO3HHHMHCO3HHHMMCO3HHHMMCO3HHHMMCO3HHHMMCO3HHHMMCO3HHHMHCO3HHHMMHHHHMHHHHMHHHHMH																
CO1Construct models for enterprise architecture definition which conform to industry standards and frameworksCO2Analyze alternative models for enterprise architecture components and processes for different organizationsCO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program Outcomes (POS)CO1MMMHMCO2HMMHMCO3HHMHMCO3HHMHMCO3HHMHMCO3HHMHMCO3HHMHHMHHMHHMHHMHHHMHHHMHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH <td></td> <td colspan="15">~</td>		~														
standards and frameworks         CO2       Analyze alternative models for enterprise architecture components and processes for different organizations         CO3       Identify critical success factors for common enterprise architect approaches         Mapping of Course Outcomes with Program Outcomes (POs)         COs/POs       PO1       PO1       PO1       PO11       PO12         CO3       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M </td <td></td> <td colspan="15"></td>																
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $																
different organizationsCO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program OutcomesPOSPOSPOSPO9PO10PO11PO12COs/POsPO1MMMHMHLHLMPO11PO12CO1MMMHMHLHLMHHCO2HMHMMHLHMHHCO3HHMMHHMMIMCO3HHMMHHMMIMCO3HHMMHHMMIMCO3HHMHMHMHMICO3HHMMHMHMMICO3HHMMHMMIMCO1HHMMHMMMCO2HHHMHMMMCO3HHHMHMMMCO1HHHMMMMCO2HHHMMMMCO3HHHMM <td>CO2</td> <td></td> <td colspan="14"></td>	CO2															
CO3Identify critical success factors for common enterprise architect approachesMapping of Course Outcomes with Program Outcomes (POs)PO1PO2PO3PO4PO5PO6PO7PO8PO9PO10PO11PO12CO1MMMHMHLHLMHCO2HMHMHHLHMHCO3HHMHMHMHMCO3HHMHMHMMCO3HHMHMMMCO1HHMHMMMCO2HHMHMMCO3HHHMHHCO3HHHMHHCO3HHHMHCO3HHHMHCO3HHHMHCO3HHHMHCO3HHHHHCO3HHHHHCO3HHHHHCO3HHHHHCO3HHHHHCO3HHHHHCO3HHHHHCO3 <t< td=""><td>02</td><td></td><td colspan="14"></td></t<>	02															
$\begin{array}{c c c c c c c c c c c c c c c c c c c $																
$\begin{array}{c c c c c c c c c c c c c c c c c c c $										urenite	et uppi	ouches				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$										PO9	<b>PO1</b>	0 PC	)11 P	012		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $																
COs / PSOs       PSO1       PSO2       PSO3       PSO4       PSO5       PSO6         CO1       H       H       M       H       M       M         CO2       H       H       M       H       H       H         CO3       H       H       H       M       M       M         H/M/L indicates Strength of Correlation       H- High, M- Medium, L-Low       Image: Construct of the strength of the strengt of the strength of the strength of the strength of the	CO2	Η	Μ	Н	Η	Μ	Μ	Η	L	Η	Μ	Η	H	[		
PSOsImage: second	CO3	Η	Η	Μ	Η	Μ	Η	Η	Μ	Η	Μ	L	N	1		
CO1     H     H     M     H     M     M       CO2     H     H     M     H     H     H       CO3     H     H     H     M     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low     Image: Construct of Construction of		PS	01	PSC	02	PS	03	PS	<b>O4</b>	P	SO5		PSO	6		
CO2     H     H     M     H     H     H       CO3     H     H     H     M     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low																
CO3     H     H     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low																
H/M/L indicates Strength of Correlation H- High, M- Medium, L-Low																
brind hinical	CO3	I	ł	H	[	ŀ	ł	I	M		Μ		Μ			
brind hinical	H/M/L indic	ates St	rength	of Corre	elation	H-H	igh, M·	- Mediu	ım, L-I	Low						
Category Basic Sciences Engineering Sciences Humanities and Social Sciences Program Core Program Electives Open Electives Practical / Project Internships / Technica Skill Soft Skills Soft Skills			0					-								
Category Basic Sciences Engineering Science Humanities and Soc Sciences Program Core Program Core Program Electives Open Electives Soft Skills Soft Skills Soft Skills			s	ial					nica							
Category Basic Sciences Engineering Scien Humanities and Sciences Sciences Program Electives Practical / Project Internships / Te Soft Skills Soft Skills Special Elective			JCe	Soc		s			chn							
Categor. Basic Science Engineering S Humanities an Sciences Program Elect Open Elective Internships / Internships / Soft Skills Soft Skills	~	0	cie			ive	s	ject	II Te		/e					
Cate Basic Scier Engineerin Humanities Sciences Sciences Program El Practical / I Internshif Soft Skills Soft Skills	30r.	lce	ы N	an	ore	ect	ive	JIO	Ski Ski	ctiv						
Ci Basic Sc Enginee Enginee Program Program Soft Ski Soft Ski	ate§	cier	rin	ties	Ŭ	Ш	ect	1/1	shif	Ele						
Basic Engin Progr Progr Soft (	Ű	Š	nee	ani	cam	ram	EI	ica	STD (	Ski	ial					
		asic	ngi	um xier	Ig0.	lĝo.	pen	act.	Inté	oft						
		B	Щ	Ϋ́Η	P1	P ₁	0	P1		Sp. Sp.						



2018 Regulation

SUBJECT			Ί	<b>]y/</b>	L		]	[/	P	P/R		C
SUBJEET	SUBJECT NAME	T	yI	Ŋ		T	/S.	LP/	R		С	
CODE	SUBJECT NAME	_/	Έ	TL	S	5.1	r		┢		<u> </u>	
		L	b	Гу	$\ $			10				_
BCS18E22	ENTERPRISE ARCHITECTURE				3		0	/0	C	J/U		3

### **OBJECTIVES:**

- To define and explain gaps
- Help to achieve the business strategy, vision and Target Operating Model
- Provide the flexibility to include new ideas in the future
- Enable faster decision making, avoiding the need for long studies
- Learn UML and BPMN Modeling.

### UNIT I Introduction

TOGAF- General Presentation-Keypoints-ADM Method: ADM Cycle-The Phases of the ADM-Iterations-ADM Techniques and Guidelines. **Components of TOGAF Architecture:** Architecture components-The Metamodel-Artifacts-Building Blocks-Deliverables. Repository and Governance: Architecture Repository-Architecture Governance.

### UNIT II Key Modeling Techniques

Models: Benefits Uses and Characteristics-The concepts of viewpoints-Special role played by diagramsconsistency and traceability-Architecture Repository-Risks and main difficulties-Repository governance-Tools and Languages. **TOGAF Models:** TOGAF Artifacts-UML and BPMN for TOGAF Modeling-**Model Vision**: Stakeholder Matrix-Artifacts linked to Goals, Requirement, and Business Process-Solution Concept Diagram-Value Chain Diagram.

### UNIT III Model Business Architecture

Business Dictionary Artifacts-Artifacts linked to Enterprise Organization, function and Services, Business Processes, Data. Information System Architecture: Application Communication Diagram-Migration Diagram- User Location Diagram-System use Case Diagram-Process System Realization Diagram-Enterprise Manageability diagram-Data Architecture-Service Data Diagram-

### UNIT IV Technology Architecture

Environment and Location Diagram-Processing Diagram-Network Computing Hardware Diagram-Benefits Diagram. SOA Processes and Information:SOA-Business Processes-Information-TOGAF Within AMUE, EDF. Archimate.

### UNIT V

Draw Business Process Diagram Using UML and BPMN.

### **TEXT BOOK:**

1. Philippe Desfray, Gilbert Raymond (2014) – Modelling Enterprise Architecture with TOGAF A Practical Guide Using UML and BPMN. Elsevier Pub.

### **REFERENCE BOOKS:**

1. Peter Rittgen, (2007)-Enterprise Modeling and Computing with UML, Idea Group Publishing.

2. Marc Lankhorst et al (2013), The Enterprise Engineering Series, Springer

### 9 Hrs

## Total Hours: 45

9 Hrs

### 9 Hrs

9 Hrs



BCS18EXX	Subject based on Industry Demand	Ту	3	0/0	0/0	3	
----------	----------------------------------	----	---	-----	-----	---	--



<u> </u>	G		<b>T</b>		201	8 Regu	lation		an (	-	<b>75</b> /	<b>D</b> /7		a	
Subject Code:	St	ibject N	ame : FIMIZA	τιον '	FFCH	NIOLIF	S		Ty/ Lb/	L	T/ S.Lr	P/I	K	С	
couc.		<b>O</b>				ngul			LD/ ETL		5.Lr				
BCS18E23	Pr	ereauisi	te: NIL						Ty	3	0/0	0/0	)	3	
L : Lecture 7				ervised	Learnir	ησ Ρ・Ε	Project		•			0/0	,	5	
Ty/Lb/ETL :							roject	1. 1	resear		cicaits				
<b>OBJECTIV</b>		/		•	/										
		erstand	importan	ce of or	otimizat	tion of i	ndustri	al pr	ocess 1	manag	ement and	l apply l	basi	с	
			thematic							U					
• 7	To anal	yse and	apprecia	te varie	ty of pe	erforma	nce me	asure	es for v	various	s optimiza	tion pro	bler	ns	
COURSE O	UTCO	MES (	<b>COs</b> ) : (	3- 5)											
CO1	A	Apply knowledge of optimization to formulate and solve engineering problems.													
CO2		Understand the different methods of optimization and be able to suggest a technique for											for a		
		specific problem.													
CO3		Understand how optimization can be used to solve industrial problems of relevance to the													
			and oil i												
Mapping of				<u> </u>			· · · · · ·					PO1			
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO	)8	P 09	P PO10 O9		P	012	
CO1	H	Η	Μ	L	L	L	L	Μ		Μ	L	Μ	L		
CO2	Η	Η	Μ	L	L	L	L	Μ		Μ	L	Μ	L		
CO3	Η	Μ	Μ	L	L	L	L	Μ		Μ	L	Μ	L		
COs /	PS	501	PSC	02	PS	03	F	PSO ²	4	]	<b>PSO5</b>		PS(	)6	
PSOs					_										
<u>CO1</u>	H		H		L		M			L		L			
<u>CO2</u>	H		H		L		M			L		L			
CO3	H	4 41	H	1.4		• • • • •	M		<del></del>	L		L			
H/M/L indi	cates S	trengtn	of Corre	elation	<u>H-H</u>	igh, M	- Mean	r — í i	L-LOW	/					
								Ski							
		s	ial					cal							
		JCe	Social		s			mic							
ury		ciei	р р		ive		ect	ecł							
Category	Ice	Š	an	ore	ect	ive	roj	Τ/							
, t	er	ling	ties	Ŭ	E	ect	1/1	ips	lls						
Ga				E E	8	Ē	ca	sh.	ki.						
Са	s Sci	Jeel	ani	ar	a		. ĭ	5	τ <b>Ω</b>						
Ca	ısic Sci	Igineer	umani	ograi	ograi	jen ]	actic	terns	oft S						
Ca	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skil	Soft Skills						



2018 Regulation	
-----------------	--

SUBJECT CODE	SUBJECT NAME	Ty / Lb	L	T/ S.Lr	P/R	С
BCS18E23	OPTIMIZATION TECHNIQUES	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- To understand importance of optimization of industrial process management and apply basic concepts of mathematics to formulate an optimization problem.
- To analyse and appreciate variety of performance measures for various optimization problems 9 Hrs

### UNIT I **Introduction to Operation Research**

Operation Research approach, scientific methods, introduction to models and modeling techniques, general methods for Operation Research models, methodology and advantages of Operation Research, history of Operation Research.

### UNIT II Linear Programming (LP)

Introduction to LP and formulation of Linear Programming problems, Graphical solution method, alternative or multiple optimal solutions, Unbounded solutions, Infeasible solutions, Maximization -Simplex Algorithm, Minimization - Simplex Algorithm using Big-M method, Two phase method, Duality in linear programming, Integer linear programming.

#### UNIT III **Transportation & Assignment Problems**

Introduction to Transportation problems, various methods of Transportation problem, Variations in Transportation problem, introduction to Assignment problems, variations in Assignment problems

### UNIT IV **Network Analysis**

Network definition and Network diagram, probability in PERT analysis, project time cost trade off, introduction to resource smoothing and allocation.

#### UNIT V Sequencing

Introduction, processing N jobs through two machines, processing N jobs through three machines, processing N jobs through m machines. Inventory Model: Introduction to inventory control, deterministic inventory model, EOQ model with quantity discount. Queuing Models: Concepts relating to queuing systems, basic elements of queuing model, role of Poison & exponential distribution, concepts of birth and death process.

### **REFERENCE BOOKS:**

- 1. J K Sharma, Operations Research Theory and Applications, MacMillan India Ltd.
- 2. ND Vohra, Quantitative Techniques in management, Tata McGraw Hill.
- 3. Handy A Taha, Operations Research An Introduction, Prentice Hall of India, New Delhi.
- 4. Wagner H M, Principles of Operations Research: With Applications to Management Decisions, Prentice-Hall of India, New Delhi.

### 9 Hrs

9 Hrs

### 9 Hrs

9 Hrs

### **Total Hours: 45**



### 8th SEMESTER ELECTIVES E-IV AND E-V (Common to CSE&IT)

BCS18H		Subject N INFORM		ORAGI	E MAN	AGEN	IENT	Ty/ Lb/	L	T/ S.Lr	P/R	C	
	_	<u> </u>		101000	4				ETL		0.10	0.10	
T. T. s. star		Prerequis				D.	D	( D . D	Ту	3	0/0	0/0	3
	ire T : Tut FL : Theor			•		•	Projec	I K K	esearch	C: Ci	realts		
OBJEC		y/La0/Ei	IIDeuue	u meo	i y anu i	Lau							
	vides a co	mnreher	nsive ur	nderstar	nding o	f the v	arious s	storage	infrastr	icture	e comp	onents	in data
	ter enviro	<b>.</b>	isive ui	lucista	iung o	i the vi	unous	noruge	mnusu	actur	e comp	Jiients	iii data
• It en	nables par nplex IT e	ticipants		e inforr	ned dec	cisions	on stora	ige-rela	ted tech	nolog	gies in a	n incre	easingly
	adoption			ned inf	rastruct	ture ma	nageme	ent and	hird pla	tforn	n techno	logies	
	rovides a						-		-			-	
	cepts, tech	•		•		e	U	1	1	1	I		
	learn the a	•	-			efits of	intellige	ent stor	age syst	ems			
	ludes blo												
stor	age netwo	orking te	chnolog	gies suo	ch as F	C SAN	I, IP SA	AN, and	I FCoE	SAN	I; busin	ess co	ntinuity
	utions such		-	replicat	tion; the	e highly	v-critica	l area o	f inform	natior	n securit	y; and	storage
	astructure												
	E OUTC												
CO1	Evaluate											AS	
CO2	Define b										ation		
CO3	Understa									re			
CO4	Identify										1 1		
CO5	Define ir								ualizatio	on tec	chnolog	les	
COs/PO	g of Cour s PO		PO3	PO4	PO5	PO6	PO7	S) PO8	PO9	P(	D10 1	PO11	PO12
CO3/10	H	H	H	H	H	H	H	H	H		H	H	H
CO2	H	H	M	H	H	H	M	H	H		H	H	H
CO3	H	H	H	H			111			-			M
	H			11	H	H	Μ		Н	I	M	Н	
UU4		H	H		H H	H M	M M	Μ	H H		M H	H H	
CO4 CO5	H	H H	H H	H H	H H H	H M H	M M M		H H H	]	M H M	H H H	H M
<u>CO4</u> <u>CO5</u> <u>COs /</u>	Н		H	Н	H H	М	Μ	M M M	H H	]	H	H H	Н
CO5	Н	Н	H	H H	H H	M H	M M	M M M	H H	נ ז	H	H H	H M
CO5 COs / PSOs CO1	Н	H PSO1 H	H PS I	H H O2 H	H H PS	M H	M M	M M M O4	H H	I SO5 H	H	H H PS	H M O6
CO5 COs / PSOs CO1 CO2	Н	H PSO1	H PS I	H H O2	H H PS	M H O3	M M PS	M M 04 H	H H P	I SO5 H H	H	H H PS	H M O6
CO5 COs / PSOs CO1 CO2 CO3	Н	H PSO1 H H H	H PS H H N	H H O2 H H M	H H PS H M	M H O3 H M M	M M PS H H	M M O4 H H	H H P	SO5 H H H	H	H H PS H H	H M O6 H H A
CO5           COs /           PSOs           CO1           CO2           CO3           CO4	Н	H PSO1 H H H H	H PS H H N N	H H O2 H H M	H H PS H M N	M H O3 H M M M	M M PS H H H	M M O4 H H H H H	H H P	SO5 H H H H	H	H H PS H H H	H M O6 H H A H
CO5           COs /           PSOs           CO1           CO2           CO3           CO4           CO5		H PSO1 H H H H H	H PS H H M N F	H H O2 H H M M H	H H PS H M N H	M H O3 H M M H	M M PS H H H H	M M O4 H H H H H	H H P	SO5 H H H	H	H H PS H H H	H M O6 H H A
CO5           COs /           PSOs           CO1           CO2           CO3           CO4           CO5	Н	H PSO1 H H H H H	H PS H H M N F	H H O2 H H M M H	H H PS H M N H	M H O3 H M M H	M M PS H H H H M- Med	M M O4 H H H H H	H H P	SO5 H H H H	H	H H PS H H H	H M O6 H H A H
CO5           COs /           PSOs           CO1           CO2           CO3           CO4           CO5		H PSO1 H H H H H	H PS H H H H M M Of Cor	H H O2 H H M H relatio	H H PS H M N H	M H O3 H M M H High, N Savito	M M PS H H H H	M M O4 H H H H H	H H P	SO5 H H H H	H	H H PS H H H	H M O6 H H A H



#### 2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
BCS18E24	INFORMATION STORAGE MANAGEMENT	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- Provides a comprehensive understanding of the various storage infrastructure components in data center environments.
- It enables participants to make informed decisions on storage-related technologies in an increasingly complex IT environment
- The adoption of software-defined infrastructure management and third platform technologies.
- It provides a strong understanding of storage technologies and prepares participants for advanced concepts, technologies, and processes.
- To learn the architectures, features, and benefits of intelligent storage systems
- Includes block-based, file-based, object-based, and unified storage; software-defined storage; storage networking technologies such as FC SAN, IP SAN, and FCoE SAN; business continuity solutions such as backup and replication; the highly-critical area of information security; and storage infrastructure management.

#### UNIT I Storage Systems

Information Storage - Evolution of Storage Technology and Architecture – Data Centre – Infrastructure – ILM – Components of Storage System Environment – Logical Components of Host RAID: Implementation, levels & comparison – ISS components, Intelligent Storage Array.

#### UNIT II Storage Technologies

Networking Technologies & Virtualization DAS – SCSI – SAN – NAS –IPSAN – CAS –Forms of Virtualization.

#### UNIT III Business Continuity

Information availability – BC Planning Life Cycle failure analysis – Backup & Recovery – Local Replication – Remote Replication.

#### UNIT IV Storage Security

Storage Security Framework – Risk Triad – Storage Security Domains – Security Implementationin Storage Networking.

#### UNIT V Managing Storage Infrastructure

Infrastructure – Storage Management Activities and Challenges – Developing an Ideal solution.

**Total Hours: 45** 

#### **TEXT BOOK:**

1. EMC Corporation, Information Storage and Management, Wiley India, 2nd edition 2012

#### **REFERENCE BOOKS:**

- 1. Robert Spalding, "Storage Networks: The Complete Reference", Tata McGraw Hill, Osborne, 2003.
- 2. Marc Farley, "Building Storage Networks", Tata McGraw Hill, Osborne, 2001.

# 9Hrs

# 9Hrs

9Hrs

9Hrs



$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	<u> </u>					2010	S Regul	auon		/	-			~
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Subject Code BCS18E25	e: Su		ETWOF				U <b>RE</b>			L	T/ S.Lı	r P/ R	C
L : Lecture T : Tutorial S.Lr : Supervised Learning P : Project R : Research C: Credits Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab OBJECTIVES : • To learn Network Layers functionality • To acquire knowledge about and VLANs • To understand IP routing, EIGRP and OSPF • To test Network security and wireless security COURSE OUTCOMES (COs) : (3-5) CO1 Understand the use of network infrastructure CO2 RecognizetheimportanceandrelevanceofVLANs and EIGRP CO3 Troubleshoot the network infrastructure Mapping of Course Outcomes with Program Outcomes (POs) COs/POs PO1 PO2 PO3 PO4 PO5 PO6 PO7 8 PO9 PO10 PO11 PO12 CO1 H M H H H M M H M H M H M H M CO2 H H M M H H M M H M H M H M CO3 H H M M H H H M M H M H M CO3 H H M H H H M H M H M CO3 H H M H H H M H M H M CO3 H H M H H H M H M M CO3 H H H M H H H H M CO3 H H H M H H H H M CO3 H H H M H H H H M CO3 H H H M H H H H H M CO3 H H H M H H H H H H CO3 H H H M H H H H H H CO3 H H H M H H H H H H CO3 H H H M H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO3 H H H H H H H H H H CO4 H H H H H H H H H H CO5 H H H H H H H H H H H CO5 H H H H H H H H H H H CO3 H H H H H H H H H H H H CO3 H H H H H H H H H H H H H CO3 H H H H H H H H H H H H CO3 H H H H H H H H H H H H H CO3 H H H H H H H H H H H H CO4 H H H H H H H H H H H H CO5 H H H H H H H H H H H H H H CO5 H H H H H H H H H H H H H H H CO5 H H H H H H H H H H H H H H H H CO5 H H H H H H H H H H H H H H H H CO5 H H H H H H H H H H H H H H H H H CO5 H H H H H H H H H H H H H H H H H H H		Dr	araquisi	to BIT1	8101						3	0/0	0/0	3
Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab OBJECTIVES : • To learn Network Layers functionality • To acquire knowledge about and VLANs • To understand IP routing, EIGRP and OSPF • To test Network security and wireless security COURSE OUTCOMES (COs) : (3-5) CO1 Understand the use of network infrastructure CO2 RecognizetheimportanceandrelevanceofVLANs and EIGRP CO3 Troubleshoot the network infrastructure Mapping of Course Outcomes with Program Outcomes (POs) COs/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO 8 PO9 PO10 PO11 PO12 CO1 H M H H H M M M M M M H H CO2 H H M M H H M M H M H M H M H M H CO3 H H M M H H H M M H M M M M M CO5 PSOs PSO1 PSO2 PSO3 PSO4 PSO5 PSO6 CO1 H H M H H M H M H M M M M CO2 M H H M H H H H M M M H M H H H H M CO3 H H H H H H H M M H H H H H H H M CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H H CO3 H H H H H H H H H H H CO3 H H H H H H H H H H H H/M/L indicates Strength of Correlation H-High, M-Medium, L-Low	I · Lecture T					Loornin	$\mathbf{p} \mathbf{p} \cdot \mathbf{p}$	Project	$\mathbf{P} \cdot \mathbf{P}_{\mathbf{Q}}$				0/0	5
OBJECTIVES : <ul> <li>To learn Network Layers functionality</li> <li>To acquire knowledge about and VLANs</li> <li>To understand IP routing, EIGRP and OSPF</li> <li>To test Network security and wireless security</li> <li>COURSE OUTCOMES (COs) : (3-5)</li> <li>CO1</li> <li>Understand the use of network infrastructure</li> <li>CO2</li> <li>RecognizetheimportanceandrelevanceofVLANs and EIGRP</li> <li>CO3</li> <li>Troubleshoot the network infrastructure</li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>COs/POS</li> <li>PO1</li> <li>PO2</li> <li>PO3</li> <li>PO4</li> <li>PO5</li> <li>PO6</li> <li>PO7</li> <li>PO</li> <li>PO9</li> <li>PO10</li> <li>PO11</li> <li>PO12</li> <li>COs/POS</li> <li>PO1</li> <li>PO2</li> <li>PO3</li> <li>PO4</li> <li>PO5</li> <li>PO6</li> <li>PO7</li> <li>PO</li> <li>PO9</li> <li>PO10</li> <li>PO11</li> <li>PO12</li> <li>COs/POS</li> <li>PS01</li> <li>PO2</li> <li>PO3</li> <li>PO4</li> <li>PO5</li> <li>PO6</li> <li>PO7</li> <li>PO</li> <li>PO9</li> <li>PO10</li> <li>PO11</li> <li>PO12</li> <li>CO3</li> <li>Troubleshoot the network infrastructure</li> <li>COs/POS</li> <li>PS01</li> <li>PO2</li> <li>PS02</li> <li>PS03</li> <li>PS04</li> <li>PS05</li> <li>PS06</li> <li>CO1</li> <li>H</li> <li>H</li> <li>M</li> <li>H</li> <li>H</li> <li>H</li> <li>M</li> <li>H</li> <li>H</li> <li>H</li> <li>M</li> <li>H</li> <li>H</li> <li>M</li> <li>H</li> <li>H</li> <li>M</li> <li>H</li> <li>H</li> <li>M</li> <li>H</li> <li>H</li> <li>H&lt;</li></ul>								Toject	K . KC	scalen C.	Cie	uns		
	•		y/ <b>Lu</b> 0/ L	mocuucu			uo							
<ul> <li>To acquire knowledge about and VLANs</li> <li>To understand IP routing, EIGRP and OSPF</li> <li>To test Network security and wireless security</li> </ul> COURSE OUTCOMES (COs) : (3 - 5) CO1 Understand the use of network infrastructure CO2 RecognizetheimportanceandrelevanceofVLANs and EIGRP CO3 Troubleshoot the network infrastructure Mapping of Course Outcomes with Program Outcomes (POs) COs/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO 8 PO9 PO10 PO11 PO12 CO1 H M H H H M M H M H M H M H M H M H M	OBJECTIV		1	. 1 .	C		1.							
• To understand IP routing, EIGRP and OSPF • To test Network security and wireless security   COURSE OUTCOMES (COs) : (3 - 5)   COI   Understand the use of network infrastructure   CO2   RecognizetheimportanceandrelevanceofVLANs and EIGRP   CO3   To ubleshoot the network infrastructure   Mapping of Course Outcomes with Program Outcomes (POs)   CO3   PO9   PO1   PO2   PO3   PO4   PO5   PSO1   PSO1   PSO2   PSO3   PSO4   PSO5   PSO6   PSO1   PSO2   PSO3   PSO4   PSO5   PSO6   CO1   H   H   PO9   PSO1   PSO2   PSO3   PSO4   PSO5   PSO6   PO9   PO14   PO   PO   PO   PO   PO   PO   PO   PO <td>•</td> <td></td> <td></td> <td></td> <td>•</td> <td></td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	•				•		•							
To test Network security and wireless security COURSE OUTCOMES (COs) : (3-5) CO1 Understand the use of network infrastructure CO2 RecognizetheimportanceandrelevanceofVLANs and EIGRP CO3 Troubleshoot the network infrastructure Mapping of Course Outcomes with Program Outcomes (POs) COs/POs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO PO PO PO1 PO1 PO1 PO12 CO1 H M H H H H H M H H H H H H H H H H H			-		-									
COURSE OUTCOMES (COs) : (3-5)         CO1       Understand the use of network infrastructure         CO2       RecognizetheimportanceandrelevanceofVLANs and EIGRP         CO3       Troubleshoot the network infrastructure         Mapping of Course Outcomes with Program Outcomes (POs)         COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO       PO10       PO11       PO12         COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO       PO10       PO11       PO12         COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO       PO10       PO11       PO12         CO1       H       M       H       H       M       H       M       H       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>														
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	COURSEO				•	u witel	C33 SECI	uny						
Toubleshoot the network infrastructure         Mapping of Course Outcomes with Program Outcomes (POs)         COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO       PO9       PO10       PO11       PO12         COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO       PO9       PO10       PO11       PO12         COs/POs       PO1       H       M       H       M       M       M       M       M       H       H       M       M       M       M       H       H       M       M       M       H       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M	CO1				-	twork i	nfrastru	cture						
Mapping of Course Outcomes with Program Outcomes (POs)         COs/POs       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO       PO9       PO10       PO11       PO12         COs/POs       PO1       H       M       H       H       M       M       M       M       M       M       H       H       M       M       M       M       M       H       H       M       M       H       H       M       M       M       M       M       H       M       M       H       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M	CO2	F	Recogniz	zetheimp	ortance	andrele	vanceo	fVLAN	s and I	EIGRP				
Cos/Pos       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO       PO9       PO10       PO11       PO12         COs/Pos       H       M       H       H       H       M       M       M       M       H       H       H         CO2       H       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       H       M       M       H       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M <td< td=""><td>CO3</td><td>J</td><td>Troubles</td><td>hoot the</td><td>networl</td><td>k infras</td><td>tructure</td><td>•</td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	CO3	J	Troubles	hoot the	networl	k infras	tructure	•						
CosPos     POI     PO2     PO3     PO4     PO5     PO6     PO7     8     PO9     PO10     PO11     PO12       C01     H     M     H     H     H     M     M     M     M     M     H     H       C02     H     H     M     H     M     H     M     H     M     H       C03     H     H     M     H     M     H     M     H     M       C04     PSO1     PSO2     PSO3     PSO4     PSO5     PSO6       PSO8     PSO1     H     H     M     H     M     M       C05     PSO1     PSO2     PSO3     PSO4     PSO5     PSO6       C01     H     H     H     H     M     M       C03     H     H     H     H     H     M       C03     H     H     H     H     M     M       C04     Joben Electives     Sciences     Interning Sciences     Interning Sciences       Soti 201     Striptic     Striptic     Striptic     Striptic     Interning Sciences       Soti 30     H     H     H     H     H     H       Sot 30	Mapping of	Cours	e Outco	mes witl	h Progr	am Ou	tcomes	s (POs)						
CO2     H     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     H     M     M     H     M     M     H     M     M     H     M     H     M     M     H     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M     M<	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7		PO9	PO	D10	PO11	PO12
CO3     H     H     M     H     M     H     M     H     M     H     M     H     M       COs / PSOs     PSO1     PSO2     PSO3     PSO4     PSO5     PSO6       CO1     H     H     M     H     M     M     M       CO2     M     H     H     H     H     H     H     M       CO3     H     H     H     H     H     H     M     M       CO3     H     H     H     H     H     M     M       CO3     H     H     H     H     M     M     M       CO3     H     H     H     H     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low     Internships / Lechnical Skills     Internships / Lechnical Skills     Internships / Lechnical Skills	CO1	Н	Μ	Н	Н	Н	М	М	Μ	Μ	I	M	Н	Η
COs / PSOs       PSO1       PSO2       PSO3       PSO4       PSO5       PSO6         CO1       H       H       M       H       M       M       M         CO2       M       H       H       H       H       H       H       H         CO3       H       H       H       H       H       H       H       M       M         CO3       H       H       H       H       H       M       M       M         CO3       H       H       H       H       H       M       M         H/M/L indicates Strength of Correlation       H- High, M- Medium, L-Low       Internships / Technical Skill       Internships / Technical Skill       Skill         Soft Skills       Soft Skills       Soft Skills       Skills       Skill       Skill	CO2	Н	Н	Μ	Η	Μ	Η	Μ	Н	Н	]	H	Μ	Н
PSOs     PSOI     PSOI     PSOI     PSOI     PSOI     PSOI     PSOI       CO1     H     H     M     M     M     M       CO2     M     H     H     H     H     CO2       CO1     H     H     H     H     H     CO2       CO2     M     H     H     H     H       CO3     H     H     H     H     CO3       H/M/L indicates Strengt     Sciences     Sciences     Sciences     Sciences       Vogram     Core     H- Rich is     Note     Note       H/M/L indicates Strengt     Core     H- Rich is     Note       Soft Skills     Joben Electives     Internships / Technical Skill     Note	CO3	Н	Н	Μ	Н	Н	Μ	Н	Μ	Н	l	М	Н	Μ
LSOs       Category         Category       Engineering Sciences         Engineering Sciences       Humanities and Social         Humanities and Social       H         HM/T indicates Strength of Core       H- High, M- Medium, T-rectical / Project         Program Electives       H- High, M- Medium, T-rectical / Sciences         Soft Skills       Internships / Technical Skill	COs /	р	501	PSO	ר <u>ז</u>	PS	03	PS	04	P	505		P	506
CO2       M       H       H       H       H       M       CO3         Engineering Sciences       Engineering Sciences       H- High, M- Medium, T-Fow       H- High, M- Medium, T-Fow       M       M         Program Core       Program Core       H- High, M- Medium, T-Fow       M       M       M         Soft Skills       Open Electives       Internships / Technical Skill       Notices       Soft Skills       Soft Skills	PSOs													
Cotegory       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       H       I       I       I       I<														
Category       Category         Basic Sciences       Engineering Sciences         Engineering Sciences       H- High, M- Medium, T-row         Humanities and Sciences       Sciences         Program Core       Norgram Electives         Program Core       Norgram Core         Soft Skills       Soft Skills														
Category Basic Sciences Engineering Sciences Humanities and Social Sciences Program Core Program Core Program Electives Program Electives Open Electives Program Sciences Soft Skills											М			Μ
Category Basic Sciences Engineering Sciences Humanities and Socia Sciences Program Electives Open Electives Program Electives Drogram Soft Skills Soft Skills	H/M/L indic	ates S	trength	of Corre	elation	H-H	igh, M-	Mediu	ım, L-	Low				
Catego Basic Sciences Engineering Sci Engineering Sci Humanities and Sciences Program Core Program Electives Program Electives Practical / Projec Internships / T Soft Skills			es	cial					mical Skill					
	Category	asic Sciences	Ingineering Science	ies and	rogram Core	rogram Electives	)pen Electives	ractical / Project	Internships / Techı	oft Skills				
	-	Щ		ЦS		∠ b				S				



SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E25	NETWORK INFRASTRUCTURE MANAGEMENT	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To learn Network Layers functionality •
- To acquire knowledge about and VLANs
- To understand IP routing, EIGRP and OSPF
- To test Network security and wireless security

#### UNIT I Internetworking & Ip Addressing

Internetworking Models – Layered Approach – OSI Reference Models – Ethernet Networking – Cabling – Data Encapsulation - Three Layer Hierarchical model - core layer - distribution layer - Access layer -TCP/IP and DoD Model – IP Addressing – Hierarchical IP Addressing scheme - Broadcast Address.

#### **UNIT II** Subnetting, VLSMAnd Ios

Subnetting basics - CIDR - VLSM Design - Summarization - Troubleshooting IP Addressing - IOS user interface - CLI - Router and switch Administrative Configuration - Router Interfaces - viewing, saving, and erasing configuration

#### **Managing Internetwork And Ip Routing** UNIT III

Internal component of a Router – routing boot sequence – configuration register – backing up and restoring configuration - CDP - resolving hostnames - Checking network connectivity - IP routing basics - Static routing - default routing - dynamic routing - RIP - IGRP

#### UNIT IV **Eigrp, OSPF, STP and VLANS**

EIGRP features - RTP - DUAL - EIGRP to support large Networks -Configuring EIGRP - Load balancing - OSPF terminology - Configuring and verifying OSPF - DR and BDR elections - Loopback interfaces - troubleshooting - STP spanning tree terms and operations - VLANs Basics - memberships -VTP - Configuring VLAN - Inter VLAN routing.

#### ACLS, NAT and Wireless Technologies UNIT V

Access Lists, VTY access, advanced Access List, Named ACLs, monitoring Access List, configuring access list - NAT names - PAT configuration - NAT using SDM - Wireless technologies - Unified wireless solutions - split MAC architecture - MESH and LWAPP - wireless security

### **TEXT BOOKS:**

- 1. Todd Lammle, 2011 "CCNA Cisco Certified Network Associate study guide Wiley India.
- 2. Brian Hill, 2013 "The complete Reference Cisco " Tata McGraw-Hill.

#### **REFERENCE BOOKS:**

- 1. Richard Deal, 2013 "CCNA Cisco Certified Network Associate study guide" Tata McGraw-Hill.
- 2. Steven Latre et al 2015 "Intelligent Mechanism for Network Component and Security" Springer.

#### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

# 9Hrs

9Hrs

# 9Hrs

### 9Hrs

# **Total Hours: 45**



(An ISO 21001 : 2018 Certified Institution) Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

#### DEPARTMENT OF INFORMATION TECHNOLOGY

				2018 R	egulat	ion							
		JNDA'	: FIONS	OF P.	ARAL		Lb	/	L			R	С
Pre	requ	isite: I	BCS18	007					3	0/0	) 0/	0	3
					$\mathbf{P}:\mathbf{P}$	roject ]			: Cre			-	
y/Lab/Ei	mbec	ided T	heory a	nd Lab	)								
		pts of l	Multi tl	readed	l, Paral	lel and	Distrib	uted Co	ompu	ting pa	radigm	s of	
			-		-	-							
- · ·		-	-	ogram	ming ii	1 Java.							
OMES (	COs	/ (	,		~								
										ots			
											6		
						ng met	hods a	nd Proc	ess fr	nteracti	on for		
		Und	lerstand	l the pr		paralle	l progra	umming	g scen	arios a	ind		
					1		DOG	DOA		0.1	<b>DO1</b>	-	01
POI							PO8	PO9		-	-		01
		3	4	3	0	/				U	I	2	
Н	_	М	L	L	L	L	Μ	М	1	L	Μ	L	r
1			-									L	
Н	Μ		L	L	L	L						L	
Н	Μ		L	L	L	L	L	Μ	]	М	L	L	
PSC	)1	PS	<b>O2</b>	PS	03	PS	04	]	PSO5	;	P	506	5
Η		Η		L		Μ		L			L		
Η		Η		L		Μ		L			L		
Η		Μ		L		Μ		L			L		
Η		Η		L		Μ		L			L		
trength	of C	Correla	ation	H- Hig	<u>gh, M-</u>	Mediu	<u>m, L-L</u>	OW					
							kill						
Ices	3 Sciences	and Social	Dre	ectives	ives	Project	/ Technical S						
Basic Scien	Engineering	Humanities Sciences	Program Cc	Program El	Open Electi	Practical / F	Internships						
		1	I		1	I			-			1	
	Pre prial S y/Lab/E mental c l programatic mer ques typ <b>DMES (</b> <b>DMES (</b> <b>PO1</b> <b>H</b> <b>H</b> <b>H</b> <b>H</b> <b>H</b> <b>H</b> <b>H</b> <b>H</b>	Prereque prial S.Lr : y/Lab/Embed mental conce programs. matic methods ques typical DMES (COs PO1 P O 2 H H H H H M H M H M H M H M H M	FOUNDA' PR         Prerequisite: I         prial       S.Lr : Superv         y/Lab/Embedded T       Image: Superv         nental concepts of I       Iprograms.         natic methods for degues typical for par       Image: Superv         DMES (COs) : (3-       Und         DMES (COs) : (3-       Und         Image: Superv       Image: Superv         Image: S	Subject Name : FOUNDATIONS PROGRAFOUNDATIONS PROGRAorial S.Lr : Supervised La y/Lab/Embedded Theory amental concepts of Multi th 1 programs. natic methods for developin ques typical for parallel prOMES (COs) : $(3-5)$ Understand Understand Dearallel PrOMES (COs) : $(3-5)$ Understand Understand possibilitieSe Outcomes with PrograPO1PPO1PPO1PPO1PPO1PPO1PPO1PPO1PPO1PPO1PPO1PPO1PPO1PPO2HHHHHHHHHHHHHHHHH <tr< td=""><td>Subject Name : FOUNDATIONS OF P. PROGRAMMIPrerequisite: BCS18007orial S.Lr : Supervised Learning y/Lab/Embedded Theory and Labnental concepts of Multi threaded 1 programs. natic methods for developing para ques typical for parallel programOMES (COs) : $(3-5)$Understanding of Understand and h Learn the Messag Parallel ProgramOMES (COs) : $(3-5)$Understand and h Learn the Messag Parallel ProgramOMES (COs) : $(3-5)$Understand and h Learn the Messag Parallel ProgramOMES (COs) : $(3-5)$Understand and h Learn the Messag Parallel ProgramOutcomes with Program Out PO1PO1PPPOPO1PPOPOQ34Se2HHMLLHMLHHHLHHHLHHHLHHHLHHHLHHHLHHHLHHLHHLHHLHMLHML</td><td>Subject Name :       FOUNDATIONS OF PARAL PROGRAMMING         Prerequisite:       BCS18007         orial       S.Lr : Supervised Learning P : Presequisite:         y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Paral laprograms.         natic methods for developing parallel programming in DMES (COs) : (3-5)         Understanding of Conculuderstand and handle S         Learn the Message Passi Parallel Programming         Understand the practical possibilities         see Outcomes with Program Outcomes         PO1       P         PO       PO         PO1       P         PO       PO         PO1       P         PO       PO         PO1       P         PO0       PO         PO1       P         PO0       PO         PO1       P         PO1       P         PO       PO</td><td>FOUNDATIONS OF PARALLEL PROGRAMMING         Prerequisite: BCS18007         orial S.Lr : Supervised Learning P : Project Dy/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and l programs.         natic methods for developing parallel programs.         atic methods for developing parallel programming in Java.         DMES (COs) : (3-5)         Understanding of Concurrent Programming         Understand and handle Semaph         Learn the Message Passing met Parallel Programming         Understand the practical parallel possibilities         PO1 P PO PO PO PO PO O 3 4 5 6 7         PO1 P PO PO PO PO PO PO O 3 4 5 6 7         H H M L L L L         H M M L L L L         H M M M L         H M M M L         PSO1 PSO2 PSO3 PS         H H H         M L         M Mediu         M L</td><td>Subject Name :TyFOUNDATIONS OF PARALLEL PROGRAMMINGTyProject R : COS PARALLEL PROGRAMMINGTyPrerequisite: BCS18007TyorialS.Lr : Supervised Learning P : Project R : Reservised Learning P : Project R : Reservised Learning in Java.nental concepts of Multi threaded, Parallel and Distributed programs. atic methods for developing parallel programs. quest typical for parallel programming in Java.DMES (COS) : (3-5)Understanding of Concurrent Programming Understand and handle Semaphores and Learn the Message Passing methods at Parallel ProgrammingUnderstand the practical parallel program understand the practical parallel program possibilitiesPO1 P PO PO PO PO PO PO PO PO 0 3 4 5 6 7PO1 P PO PO PO PO PO PO PO PO 0 3 4 5 6 7H H M L L L L M H M M L L L L M H M M L L L M H H H H M L M H H H H M L M H H H H L MMulti Heigh, M- Medium, L-LSeOutcomes with Program Outcomes (POs)</td><td>Subject Name :       Ty/         FOUNDATIONS OF PARALLEL       $Lb/$         PROGRAMMING       ET         L       Prerequisite: BCS18007       Ty         orial       S.Lr : Supervised Learning P : Project R : Research C         y/Lab/Embedded Theory and Lab       mental concepts of Multi threaded, Parallel and Distributed Co         nental concepts of Multi threaded, Parallel and Distributed Co       programs.         atic methods for developing parallel programs.       understanding of Concurrent Programming C         Understand and handle Semaphores and Moni       Learn the Message Passing methods and Proc         Parallel Programming       Understand the practical parallel programming         understand the practical parallel programming       possibilities         see Outcomes with Program Outcomes (POs)       PO1         P P O       PO       PO       PO         Q       3       4       5       6       7         H       H       M       L       L       L       M       M         H       M       L       L       L       M       M         H       M       L       L       L       M       M         H       M       L       L       L       M       <td< td=""><td>Subject Name :       Ty/       L         FOUNDATIONS OF PARALLEL       $PROGRAMMING$ $Lb/$         Prerequisite:       BCS18007       Ty       3         orial       S.Lr : Supervised Learning P : Project R : Research C: Crevely/Lab/Embedded Theory and Lab       Ty       3         nental concepts of Multi threaded, Parallel and Distributed Computer Programs.       Image: Concept State Programming in Java.       DMES (COs) : (3-5)         Understanding of Concurrent Programming Concept Understand and handle Semaphores and Monitors       Learn the Message Passing methods and Process In Parallel Programming         Understand the practical parallel programming scer possibilities       Understand the practical parallel programming scer possibilities         Se Outcomes with Program Outcomes (POS)       PO1       P       PO       PO       PO       PO       PO       PO         H       H       M       L       L       L       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M</td></td<><td>Subject Name :       Ty/       L       T//         FOUNDATIONS OF PARALLEL       PROGRAMMING       Lb/       S.L         Prerequisite: BCS18007       Ty       3       0/0         orial       S.L : Supervised Learning P : Project R : Research C: Credits       y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and Distributed Computing patheres       nental concepts of Multi threaded, Parallel and Distributed Computing patheres         ques typical for parallel programming in Java.       DMES (COs) : (3-5)       Understanding of Concurrent Programming Concepts         Understand and handle Semaphores and Monitors       Learn the Message Passing methods and Process Interacti Parallel Programming         Understand the practical parallel programming scenarios a possibilities       0         reg Outcomes with Program Outcomes (POs)       PO1         PO1       P       PO       PO       PO       PO         Q       3       4       5       6       7       0         L       L       L       L       M       M       L         H       H       M       L       L       L       M       M         PO1       P       PO       PO       PO       PO       PO       PO       PO1</td><td>Subject Name :       Ty/       L       T/       P/       L       T/       P/         FOUNDATIONS OF PARALLEL       PROGRAMMING       Lb/       Lb/       S.Lr       S.Lr       P         Prerequisite:       BCS18007       Ty       3       0/0       0/         orial       S.Lr : Supervised Learning P : Project R : Research C: Credits       y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and Distributed Computing paradigm       programs.         autic methods for developing parallel programming in Java.       DMES (COS) : (3-5)         Understanding of Concurrent Programming Concepts       Understand and handle Semaphores and Monitors         Learn the Message Passing methods and Process Interaction for Parallel Programming       Understand the practical parallel programming scenarios and possibilities         FO1 P PO PO PO PO PO PO PO8         PO1       P PO1       PO1         Q       3       4       5       6       7       0       1         L       L       L       L       M       M       M       M         H       H       M       L       L       L       M       M       L         Understand and handle Semaphores and Monitors       1       1       1</td><td>Subject Name :       Ty/       L       T/       P/R         FOUNDATIONS OF PARALLEL       Ty/       L       T/       L       T/       L       T/       L       D//       Colspan="2"&gt;T/       S.Lr       F/R       Ty       3       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0</td></td></tr<>	Subject Name : FOUNDATIONS OF P. PROGRAMMIPrerequisite: BCS18007orial S.Lr : Supervised Learning y/Lab/Embedded Theory and Labnental concepts of Multi threaded 1 programs. natic methods for developing para ques typical for parallel programOMES (COs) : $(3-5)$ Understanding of Understand and h Learn the Messag Parallel ProgramOMES (COs) : $(3-5)$ Understand and h Learn the Messag Parallel ProgramOMES (COs) : $(3-5)$ Understand and h Learn the Messag Parallel ProgramOMES (COs) : $(3-5)$ Understand and h Learn the Messag Parallel ProgramOutcomes with Program Out PO1PO1PPPOPO1PPOPOQ34Se2HHMLLHMLHHHLHHHLHHHLHHHLHHHLHHHLHHHLHHLHHLHHLHMLHML	Subject Name :       FOUNDATIONS OF PARAL PROGRAMMING         Prerequisite:       BCS18007         orial       S.Lr : Supervised Learning P : Presequisite:         y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Paral laprograms.         natic methods for developing parallel programming in DMES (COs) : (3-5)         Understanding of Conculuderstand and handle S         Learn the Message Passi Parallel Programming         Understand the practical possibilities         see Outcomes with Program Outcomes         PO1       P         PO       PO         PO1       P         PO       PO         PO1       P         PO       PO         PO1       P         PO0       PO         PO1       P         PO0       PO         PO1       P         PO1       P         PO       PO	FOUNDATIONS OF PARALLEL PROGRAMMING         Prerequisite: BCS18007         orial S.Lr : Supervised Learning P : Project Dy/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and l programs.         natic methods for developing parallel programs.         atic methods for developing parallel programming in Java.         DMES (COs) : (3-5)         Understanding of Concurrent Programming         Understand and handle Semaph         Learn the Message Passing met Parallel Programming         Understand the practical parallel possibilities         PO1 P PO PO PO PO PO O 3 4 5 6 7         PO1 P PO PO PO PO PO PO O 3 4 5 6 7         H H M L L L L         H M M L L L L         H M M M L         H M M M L         PSO1 PSO2 PSO3 PS         H H H         M L         M Mediu         M L	Subject Name :TyFOUNDATIONS OF PARALLEL PROGRAMMINGTyProject R : COS PARALLEL PROGRAMMINGTyPrerequisite: BCS18007TyorialS.Lr : Supervised Learning P : Project R : Reservised Learning P : Project R : Reservised Learning in Java.nental concepts of Multi threaded, Parallel and Distributed programs. atic methods for developing parallel programs. quest typical for parallel programming in Java.DMES (COS) : (3-5)Understanding of Concurrent Programming Understand and handle Semaphores and Learn the Message Passing methods at Parallel ProgrammingUnderstand the practical parallel program understand the practical parallel program possibilitiesPO1 P PO PO PO PO PO PO PO PO 0 3 4 5 6 7PO1 P PO PO PO PO PO PO PO PO 0 3 4 5 6 7H H M L L L L M H M M L L L L M H M M L L L M H H H H M L M H H H H M L M H H H H L MMulti Heigh, M- Medium, L-LSeOutcomes with Program Outcomes (POs)	Subject Name :       Ty/         FOUNDATIONS OF PARALLEL $Lb/$ PROGRAMMING       ET         L       Prerequisite: BCS18007       Ty         orial       S.Lr : Supervised Learning P : Project R : Research C         y/Lab/Embedded Theory and Lab       mental concepts of Multi threaded, Parallel and Distributed Co         nental concepts of Multi threaded, Parallel and Distributed Co       programs.         atic methods for developing parallel programs.       understanding of Concurrent Programming C         Understand and handle Semaphores and Moni       Learn the Message Passing methods and Proc         Parallel Programming       Understand the practical parallel programming         understand the practical parallel programming       possibilities         see Outcomes with Program Outcomes (POs)       PO1         P P O       PO       PO       PO         Q       3       4       5       6       7         H       H       M       L       L       L       M       M         H       M       L       L       L       M       M         H       M       L       L       L       M       M         H       M       L       L       L       M <td< td=""><td>Subject Name :       Ty/       L         FOUNDATIONS OF PARALLEL       $PROGRAMMING$ $Lb/$         Prerequisite:       BCS18007       Ty       3         orial       S.Lr : Supervised Learning P : Project R : Research C: Crevely/Lab/Embedded Theory and Lab       Ty       3         nental concepts of Multi threaded, Parallel and Distributed Computer Programs.       Image: Concept State Programming in Java.       DMES (COs) : (3-5)         Understanding of Concurrent Programming Concept Understand and handle Semaphores and Monitors       Learn the Message Passing methods and Process In Parallel Programming         Understand the practical parallel programming scer possibilities       Understand the practical parallel programming scer possibilities         Se Outcomes with Program Outcomes (POS)       PO1       P       PO       PO       PO       PO       PO       PO         H       H       M       L       L       L       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M</td></td<> <td>Subject Name :       Ty/       L       T//         FOUNDATIONS OF PARALLEL       PROGRAMMING       Lb/       S.L         Prerequisite: BCS18007       Ty       3       0/0         orial       S.L : Supervised Learning P : Project R : Research C: Credits       y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and Distributed Computing patheres       nental concepts of Multi threaded, Parallel and Distributed Computing patheres         ques typical for parallel programming in Java.       DMES (COs) : (3-5)       Understanding of Concurrent Programming Concepts         Understand and handle Semaphores and Monitors       Learn the Message Passing methods and Process Interacti Parallel Programming         Understand the practical parallel programming scenarios a possibilities       0         reg Outcomes with Program Outcomes (POs)       PO1         PO1       P       PO       PO       PO       PO         Q       3       4       5       6       7       0         L       L       L       L       M       M       L         H       H       M       L       L       L       M       M         PO1       P       PO       PO       PO       PO       PO       PO       PO1</td> <td>Subject Name :       Ty/       L       T/       P/       L       T/       P/         FOUNDATIONS OF PARALLEL       PROGRAMMING       Lb/       Lb/       S.Lr       S.Lr       P         Prerequisite:       BCS18007       Ty       3       0/0       0/         orial       S.Lr : Supervised Learning P : Project R : Research C: Credits       y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and Distributed Computing paradigm       programs.         autic methods for developing parallel programming in Java.       DMES (COS) : (3-5)         Understanding of Concurrent Programming Concepts       Understand and handle Semaphores and Monitors         Learn the Message Passing methods and Process Interaction for Parallel Programming       Understand the practical parallel programming scenarios and possibilities         FO1 P PO PO PO PO PO PO PO8         PO1       P PO1       PO1         Q       3       4       5       6       7       0       1         L       L       L       L       M       M       M       M         H       H       M       L       L       L       M       M       L         Understand and handle Semaphores and Monitors       1       1       1</td> <td>Subject Name :       Ty/       L       T/       P/R         FOUNDATIONS OF PARALLEL       Ty/       L       T/       L       T/       L       T/       L       D//       Colspan="2"&gt;T/       S.Lr       F/R       Ty       3       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0</td>	Subject Name :       Ty/       L         FOUNDATIONS OF PARALLEL $PROGRAMMING$ $Lb/$ Prerequisite:       BCS18007       Ty       3         orial       S.Lr : Supervised Learning P : Project R : Research C: Crevely/Lab/Embedded Theory and Lab       Ty       3         nental concepts of Multi threaded, Parallel and Distributed Computer Programs.       Image: Concept State Programming in Java.       DMES (COs) : (3-5)         Understanding of Concurrent Programming Concept Understand and handle Semaphores and Monitors       Learn the Message Passing methods and Process In Parallel Programming         Understand the practical parallel programming scer possibilities       Understand the practical parallel programming scer possibilities         Se Outcomes with Program Outcomes (POS)       PO1       P       PO       PO       PO       PO       PO       PO         H       H       M       L       L       L       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M       M	Subject Name :       Ty/       L       T//         FOUNDATIONS OF PARALLEL       PROGRAMMING       Lb/       S.L         Prerequisite: BCS18007       Ty       3       0/0         orial       S.L : Supervised Learning P : Project R : Research C: Credits       y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and Distributed Computing patheres       nental concepts of Multi threaded, Parallel and Distributed Computing patheres         ques typical for parallel programming in Java.       DMES (COs) : (3-5)       Understanding of Concurrent Programming Concepts         Understand and handle Semaphores and Monitors       Learn the Message Passing methods and Process Interacti Parallel Programming         Understand the practical parallel programming scenarios a possibilities       0         reg Outcomes with Program Outcomes (POs)       PO1         PO1       P       PO       PO       PO       PO         Q       3       4       5       6       7       0         L       L       L       L       M       M       L         H       H       M       L       L       L       M       M         PO1       P       PO       PO       PO       PO       PO       PO       PO1	Subject Name :       Ty/       L       T/       P/       L       T/       P/         FOUNDATIONS OF PARALLEL       PROGRAMMING       Lb/       Lb/       S.Lr       S.Lr       P         Prerequisite:       BCS18007       Ty       3       0/0       0/         orial       S.Lr : Supervised Learning P : Project R : Research C: Credits       y/Lab/Embedded Theory and Lab         nental concepts of Multi threaded, Parallel and Distributed Computing paradigm       programs.         autic methods for developing parallel programming in Java.       DMES (COS) : (3-5)         Understanding of Concurrent Programming Concepts       Understand and handle Semaphores and Monitors         Learn the Message Passing methods and Process Interaction for Parallel Programming       Understand the practical parallel programming scenarios and possibilities         FO1 P PO PO PO PO PO PO PO8         PO1       P PO1       PO1         Q       3       4       5       6       7       0       1         L       L       L       L       M       M       M       M         H       H       M       L       L       L       M       M       L         Understand and handle Semaphores and Monitors       1       1       1	Subject Name :       Ty/       L       T/       P/R         FOUNDATIONS OF PARALLEL       Ty/       L       T/       L       T/       L       T/       L       D//       Colspan="2">T/       S.Lr       F/R       Ty       3       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0       0/0



**2018 Regulation** 

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E26	FOUNDATIONS OF PARALLEL PROGRAMMING	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- Fundamental concepts of Multi threaded, Parallel and Distributed Computing paradigms of parallel programs.
- Systematic methods for developing parallel programs.
- Techniques typical for parallel programming in Java.

#### UNIT I **Concurrent Programming Concepts**

Concurrent programming concepts, Techniques for parallelizing programs, Shared Variable Programming: Process and Synchronisation - Synchronization, atomic actions, and await statements, Semantics of concurrent programs; ways to avoid interference, Safety and liveness properties; Critical sections: spin locks, efficient spin locks; fair solutions, Parallel programming concepts; bag of tasks paradigm; Pthreads library, Barriers: counter, coordinator, combining tree, Symmetric barriers; data parallel algorithms, Parallel scientific computing

#### UNIT II **Semaphores And Monitors**

Semaphores: mutual exclusion, signaling, split binary, resource counting, dining philosophers, readers/writers, passing the baton, resource allocation and scheduling, Implementations of Semaphores in kernels, multiprocessors;

Monitors: basic concepts, signaling disciplines, synchronization techniques, larger examples; use in Java, Pthreads, Implementation of Monitors in Kernel

#### UNIT III **Message Passing And RMI**

Message passing: basic concepts and examples, clients and servers, file servers, interacting peers, Synchronous, Message passing in MPI, and Java; Remote operations; RPC; Java RMI, Rendezvous, distributed readers and writers

#### **UNIT IV Process Interaction And Distributed Programming**

Process interaction Paradigms: Managers/Workers, heartbeat algorithms; pipeline algorithms, Probe/Echo Algorithm, Broadcast Algorithm, Token Passing Algorithms - Distributed programming: replicated files, dining philosophers, distributed file systems

#### UNIT V **Parallel Programming**

Speed and Efficiency, Overhead and Challenges - Scientific Computing : Grid Computations, Particle Computations, Matrix Computations - Case Study of Parallel Programming Libraries in Pthread, MPI and OpenMP – Parallelizing Compilers – Other Parallel Programming Models – Parallel Programming Tools

#### **TEXT BOOK:**

1. Greg Andrews ,2000, Foundations of Multithreaded, Parallel, and Distributed Programming. Addison-Wesley, Digitized in 16 Nov 2007, ISBN 0201357526, 9780201357523

#### **REFERENCE BOOK:**

1. Zbigniew J. Czech, 2016, Introduction to Parallel Computing, Cambridge University Press, ISBN 1316802787, 9781316802786

# 9Hrs

### 9Hrs

9Hrs

9Hrs

### 9Hrs

**Total Hours: 45** 



Subject Cod	a. (	Subject N	omo :		2010	Kegul		T/	т	Τ/	D/D	C
Subject Cou	.e	Subject IN	VIRTU	1 <b>AT 17</b>		г		Ty/	L		P/R	C
BCS18E27	7		VINIC					Lb/		S.Lr		
DCDIOL2	′  -		Prerequ	icito. D	IT 1 900	7		ETL Ty	3	0/0	0/0	3
L : Lecture 7	$\cdot T_{11}$	torial S	$\frac{1}{Lr}$ : Supe				Project				0/0	3
Ty/Lb/ETL :						0	Toject	K . Kes	aren e.	cicuits		
OBJECTIV		лу, <b>Ци</b> о, Ц	mocaaca	111001.	, and E	uo						
		datas sh	ould kno	w and	undor	tand t		aral cor	a ante t	hoory on	d tormi	nology of
		alization.	Julu Kilo	w anu	unuera		ie gein		icepis, i	incory an	u termin	lology of
		in Netwo	rk virtua	lization								
						COME	S (COs	s):(3-	5)			
CO1		Server vi					-					
CO2		Virtual n			-	•			istration			
CO3		Introduct	tion to ne	tworki	ng fund	amenta	ls and la	ayering	structure	e		
Mapping of	Cou				-							
COs/POs	PO		PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	PO8	PO9	<b>PO10</b>	PO1	PO12
											1	
CO1	H	Μ	Μ	L	Μ	L	L	L	L	L	L	Μ
CO2	H	Μ	Μ	L	Μ	L	L	L	L	L	L	Μ
CO3	H	Μ	Μ	L	Μ	L	L	L	L	L	L	Μ
COs /	PSC	01	PSO2		PSO3		PSO4	l –	PSO5		PSO6	
PSOs												
C01	Η		Μ		L		Μ		Μ		L	
CO2	Η		Μ		L		Μ		Μ		L	
CO3	Η		Μ		L		Μ		Μ		L	
H/M/L indic	cates	Strength	of Corre	elation	H- H	igh, M	Mediu	ım, L-L	ow			
			ces									
			Social Sciences					<u>cchnical Skill</u> kills				
	-	Sciences	Sc		es	~	ct	al S				
	iences	cier	ial	Core	ctiv	ives	Project	nic: Is				
ry	cien		Soc		Ще	ecti		<u>echni</u> kills				
ego	c Sc	ring		ran	m	ı El	cal	ps / Te Soft Sk				
Category	Basic Sc	nee	s ar	Program	Program Electives	Open Electives	Practical /	ips				
	В	Engineering	itie	д	$\operatorname{Pro}$	0	$\Pr$	Internships / Te Soft Sł				
		Ш	nan					nter				
			Humanities and					II				
					~				1			
			1	l	-			1 1	1		1	L



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty / Lb	L	T/ S.Lr	P/R	С
BCS18E27	VIRTUALIZATION	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- Candidates should know and understand the general concepts, theory and terminology of Virtualization.
- Work in Network virtualization

### UNIT I Overview of Virtualization

Basics of Virtualization - Virtualization Types – Desktop Virtualization – Network Virtualization – Server and Machine Virtualization – Storage Virtualization – System-level or Operating Virtualization – Application Virtualization-Virtualization Advantages - Virtual Machine Basics – Taxonomy of Virtual machines - Process Virtual Machines - System Virtual Machines – Hypervisor - Key Concepts

### UNIT II Server Consolidation

Hardware Virtualization – Virtual Hardware Overview - Sever Virtualization – Physical and Logical Partitioning - Types of Server Virtualization – Business cases for Sever Virtualization – Uses of Virtual server Consolidation – Planning for Development – Selecting server Virtualization Platform

#### UNIT III Network Virtualization

Design of Scalable Enterprise Networks - Virtualizing the Campus WAN Design - WAN Architecture - WAN Virtualization - Virtual Enterprise Transport Virtualization–VLANs and Scalability - Theory Network Device Virtualization Layer 2 - VLANs Layer 3 VRF Instances Layer 2 - VFIs Virtual Firewall Contexts Network Device Virtualization - Data-Path Virtualization Layer 2: 802.1q - Trunking Generic Routing Encapsulation - IPsec L2TPv3 Label Switched Paths - Control-Plane Virtualization–Routing Protocols- VRF - Aware Routing Multi-Topology Routing.

### UNIT IV Virtualizing Storage

SCSI- Speaking SCSI- Using SCSI buses – Fiber Channel – Fiber Channel Cables – Fiber Channel Hardware Devices – iSCSI Architecture – Securing iSCSI – SAN backup and recovery techniques – RAID – SNIA Shared Storage Model – Classical Storage Model – SNIA Shared Storage Model – Host based Architecture – Storage based architecture – Network based Architecture – Fault tolerance to SAN – Performing Backups – Virtual tape libraries.

### UNIT V Virtual Machines Products

Xen Virtual machine monitors- Xen API – VMware – VMware products - Vmware Features – Microsoft Virtual Server – Features of Microsoft Virtual Server

#### **TEXT BOOKS:**

- 1. William von Hagen (2008) Professional Xen Virtualization, Wrox Publications
- 2. Chris Wolf, Erick M. Halter (2005) Virtualization: From the Desktop to the Enterprise, APress
- 3.

### **REFERENCE BOOKS:**

- 1. Reddy, Victor Moreno (2006) Network virtualization, Cisco Press
- 2. James E. Smith, Ravi Nair (2005) Virtual Machines: Versatile Platforms for Systems and Processes, Elsevier/Morgan Kaufmann
- 3. David Marshall, Wade A. Reynolds (2006) Advanced Server Virtualization: VMware and Microsoft Platform in the Virtual Data Center, Auerbach Publications

Subject Code:	Subject Name :	Ty/	L	Τ/	P/R	С

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

## 9 Hrs

9Hrs

9Hrs

### 9Hrs

# 9Hrs

# Total Hours: 45



ETLTyPrerequisite: BCS18006TyTy30/00/0Course T: Tutorial S.Lr : Supervised Learning P : Project R : Research C: CreditsTy/Lb/ETL : Theory/Lab/Embedded Theory and LabOBJECTIVES :• To understand the concepts of Distributed file system• To acquire knowledge about Hbase, YARN, PIG and OOZIE• To understand MapReduce types and formats• To examine Hadoop Usage• To understand the concepts of NoSQL, Flume and SqoopCOURSE OUTCOMES (COS) : (3-5)CO1Understand the application of distributed file system.CO2Recognize the importanceandrelevanceofHDES.CO3Create efficient application using Pig and Oozie.Mapping of Course Outcomes with Program Outcomes (POS)COs/POSPO1PO1PO12PO3PO4PO5PO6PO7PO8POPO11PO12CO1MHHMMHHHCOs/POSPS01PS02PS03PS04PS05PS06CO2MMMMMMMMMM <th c<="" th=""><th></th><th></th><th></th><th></th><th></th><th></th><th>Regula</th><th></th><th></th><th></th><th>1 1</th><th></th><th>-</th><th></th></th>	<th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Regula</th> <th></th> <th></th> <th></th> <th>1 1</th> <th></th> <th>-</th> <th></th>							Regula				1 1		-	
Prerequisite: BCS18006TyTy30/00/03Lecture T: TutorialSLr: Supervised Learning P: Project R: Research C: CreditsTy/Lb/ETL: Theory/Lab/Embedded Theory and LabOBJECTIVES :• To understand the concepts of Distributed file system• To acquire knowledge about Hbase, YARN, PIG and OOZIE•• To understand MapReduce types and formats•• To caramine Hadoop Usage•• To understand the concepts of NoSQL, Flume and SqoopCOURSE OUTCOMES (COs) : (3 - 5)CO1Understand the application of distributed file system.CO2Recognize the importanceandrelevanceofHDFS.CO3Create efficient application using Pig and Oozie.Mapping of Course outcomes with Program Outcomes (POs)COS/POsPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12CO1MHHHMMHHHCO2HMHMHHHCO3HHHMMHHCO4HHHMMHHCO5PSO1PSO2PSO3PSO4PSO5PSO6CO1HHMHHHH	BCS18E28		HADO	OOP DIS	STRIBU	UTED I	FILE S	YSTEN	M	Lb/ FTI		S.Lr	•		
L : Lecture T : Tutorial S.Lr : Supervised Learning P : Project R : Research C : Credits Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab OBJECTIVES : • To understand the concepts of Distributed file system • To acquire knowledge about Hbase, YARN, PIG and OOZIE • To understand MapReduce types and formats • To examine Hadoop Usage • To understand the concepts of NoSQL, Flume and Sqoop COURSE OUTCOMES (COS) : (3 - 5) CO1 Understand the application of distributed file system. CO2 Recognize the importanceandrelevanceofHDFS. CO3 Create efficient application using Pig and Oozie. Mapping of Course Outcomes with Program Outcomes (POS) COs/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 9 PO10 PO11 PO12 CO1 M H H H H M M M H M H M CO2 H M H M H M H M M H M H CO3 H H M M H M M M H M H CO3 H H H M H M M M M H M H CO3 H H H M H H M M M M M M M CO3 H H H M H M M M M M M CO3 H H H M H M M M M M M CO3 H H H M H M M M M M M CO3 H H H M H M M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M CO3 H H H M H M M M M CO3 H H H M H M M M M CO3 H H H M H M M M CO3 H H H M H M M M CO3 H H H M M H M M CO3 H H H M H M M M CO3 H H H M M H M M M CO3 H H H M H M M M M CO3 H H H M H M M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M H M M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M M CO4 H M M M M M M M M CO5 M M M M M M M M M M CO5 M M M M M M M M M M CO5 M M M M M M M M M M CO5 M M M M M M M M M M M CO5 M M M M M M M M M M M M M CO5 M M M M M M M M M M M M M CO5 M M M M M M M M M M M M M CO5 M M M M M M M M M M M M CO5 M M M M M M M M M M M M M M M M CO5 M M M M M M M M M M M M M M M M CO5 M M M M M M M M M M M M M M M M CO5 M M M M M M M M M M M M M M M M M M CO5 M M M M M M M M M M M M M M M M M M CO5 M M M M M M M M M M M M M M M M M M		Dr	maguiai	to DCS1	2006						2	0/0	0/0	2	
Ty/Lb/ETL : Theory/Lab/Embedded Theory and Lab         OBJECTIVES :         • To understand the concepts of Distributed file system         • To acquire knowledge about Hbase, YARN, PIG and OOZIE         • To understand MapReduce types and formats         • To examine Hadoop Usage         • To understand the concepts of NoSQL, Flume and Sqoop         COURSE OUTCOMES (COs) : (3-5)         CO1       Understand the application of distributed file system.         CO2       Recognize the importanceandrelevanceofHDFS.         CO3       Create efficient application using Pig and Oozie.         Mapping of Course Outcomes with Program Outcomes (POs)         COs/POS       PO1       PO2       PO3       PO4       PO5       PO6       PO7       PO8       9       PO10       PO11       PO12         CO1       M       H       H       H       M       M       H       H         CO2       Recognize the importanceandrelevanceofHDFS.       CO3       Cos/POs       PO1       PO11       PO12         CO3       L       PO2       PO3       PO4       PO5       PO6       PO7       PO8       9       PO10       PO11       PO12         CO3       H       H       H	I. I. Looturo 7					Loornin	$\mathbf{D} \cdot \mathbf{D}$	Project	$\mathbf{D} \cdot \mathbf{D} \alpha$				0/0	5	
OBJECTIVES :       • To understand the concepts of Distributed file system         • To acquire knowledge about Hbase, YARN, PIG and OOZIE         • To understand MapReduce types and formats         • To understand MapReduce types and formats         • To understand the concepts of NoSQL, Flume and Sqoop         COURSE OUTCOMES (COs) : (3 - 5)         CO1       Understand the application of distributed file system.         CO2       Recognize the importanceandrelevanceofHDFS.         CO3       Create efficient application using Pig and Oozie.         Mapping of Course Outcomes with Program Outcomes (POs)         CO1       M H         CO2       Recognize the importanceandrelevanceofHDFS.         CO3       Create efficient application using Pig and Oozie.         Mapping of Course Outcomes with Program Outcomes (POs)         CO1       M H         CO2       PO3       PO4       PO5       PO6       PO7       PO8       PO       PO10       PO11       PO12         CO1       M H       H       H       M       M       H       M       M         CO2       PO3       PO4       PO5       PO6       PO7       PO8       PO10       PO11       PO12         CO3       H       M       H							•	Toject	<b>к</b> . кез	search C	U	euns			
• To understand the concepts of Distributed file system • To acquire knowledge about Hbase, YARN, PIG and OOZIE • To understand MapReduce types and formats • To examine Hadoop Usage • To understand the concepts of NoSQL, Flume and Sqoop COURSE OUTCOMES (COs) : (3 - 5) COURSE OUTCOMES (COs) : (3 - 5) CO1 Understand the application of distributed file system. CO2 Recognize the importanceandrelevanceofHDFS. CO3 Create efficient application using Pig and Oozie. Mapping of Course Outcomes with Program Outcomes (POs) COs/POs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO 9 PO10 PO11 PO12 CO1 M H H H H M M M H M H M CO3 H H M M H M M M H M H M CO3 H H M M H M M M M H M H M CO3 H H H M H M M M M M M M M H M CO3 H H H M H M M M M M M M M CO2 M M M H M H M M M M M M M CO2 M M H M H M M M M M M M CO2 M M H M H M M M M M M M M H/VL indicates Strength of Correlation H-High, M-Medium, L-Low Co3 Fig. Fig. Strength of Correlation H-High, M-Medium, L-Low Co3 Fig. Fig. Strength of Correlation H-High, M-Medium, L-Low			//Lau/L	mbedded	Theory		aU								
• To acquire knowledge about Hbase, YARN, PIG and OOZIE • To understand MapReduce types and formats • To examine Hadoop Usage • To understand the concepts of NoSQL, Flume and Sqoop COURSE OUTCOMES (COs) : (3 - 5) CO1 Understand the application of distributed file system. CO2 Recognize the importanceandrelevanceofHDFS. CO3 Create efficient application using Pig and Oozie. Mapping of Course Outcomes with Program Outcomes (POs) COs/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 $\frac{PO}{9}$ PO10 PO11 PO12 CO1 M H H H H M M M M H M H H CO2 H M H H H H M M M H M H H CO3 H H M M H H M M M H M H H CO3 H H H M H H M M M H M H H CO3 H H H M H H M M M M H M H CO3 H H H M H H M M M M H M CO3 H H H M H H M M M M M M CO3 H H H M H M M M M M M CO3 H H H M H M M M M M M CO3 H H H M H M M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M M CO3 H H H M H M M M M M CO3 H H H M H M H M M M M CO3 H H H M H M H M M M M CO3 H H H M H M H M M M M CO3 H H H M H M H M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M M CO3 H H H M M M M M M CO3 H H H M M M M M M M CO3 H H H M M M M M M M CO3 H H H M M M M M M M CO3 H H H M M M M M M M CO3 H H H M M M M M M M M CO3 H H H M M M M M M M M M CO3 H H H M M M M M M M M M M CO3 H M H M M M M M M M M M M M M CO3 H M H M M M M M M M M M M M M M CO3 H M H M M M M M M M M M M M M M M CO3 H M M M M M M M M M M M M M M M M M M			ratand t	ha conce	nts of	Distrib	utod file	ouston	•						
<ul> <li>To understand MapReduce types and formats</li> <li>To examine Hadoop Usage</li> <li>To understand the concepts of NoSQL, Flume and Sqoop</li> <li>COURSE OUTCOMES (COs) : (3-5)</li> <li>CO1 Understand the application of distributed file system.</li> <li>CO2 Recognize the importanceandrelevanceofHDFS.</li> <li>CO3 Create efficient application using Pig and Oozie.</li> <li>Mapping of Course Outcomes with Program Outcomes (POs)</li> <li>COs/POs PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO 9 PO10 PO11 PO12</li> <li>CO1 M H H H H H M M M H M H M</li> <li>CO2 H M H H H H M M M H M H H</li> <li>CO3 H H M H M H M M M H M H H</li> <li>CO3 H H M H M H M M M M M M H M H</li> <li>CO3 H H H M H H M M M M M M M M M H</li> <li>CO3 H H H M H M M M M M M M M M</li> <li>CO3 H H H M H M M M M M M M M M M</li> <li>CO3 H H H M H M M M M M M M M M</li> <li>CO3 H H H M H M M M M M M M M M</li> <li>CO3 H H H M H M M M M M M M M</li> <li>CO3 H H H M H M H M M M M M M</li> </ul>										7					
• To examine Hadoop Usage • To understand the concepts of NoSQL, Flume and Sqoop COURSE OUTCOMES (COs) : (3 - 5) CO1 Understand the application of distributed file system. CO2 Recognize the importanceandrelevanceofHDFS. CO3 Create efficient application using Pig and Oozie. Mapping of Course Outcomes with Program Outcomes (POs) COs/POS PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO 9 PO10 PO11 PO12 CO1 M H H H H H M M M H M H H CO2 H M H M H M H M M H M H H CO3 H H M M H M H M H M H H CO3 H H H M H H H M M M M M M H M H CO3 H H H M H H H M M M M M M H M CO3 H H H M H H H M M M M M H M H CO3 H H H M H M M M M M H M H CO3 H H H M H M M M M M M H CO3 H H H M H M M M M M M CO3 H H H M M H M M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M M M M CO3 H H H M M H M H M M CO3 H H H M H M H M M M CO3 H H H M H M H M M M CO3 H H H M H M H M H M M CO3 H H H M H M H M M M M CO3 H H H M H M H M M M M CO3 H H H M H M H M M M M CO3 H H H M H M M M M M M H/M/L indicates Strength of Correlation H- High, M- Medium, L-Low		-		-				io anu	UULII	<u>ن</u> ـ					
To understand the concepts of NoSQL, Flume and Sqoop         COURSE OUTCOMES (COs) : (3-5)         CO1       Understand the application of distributed file system.         CO2       Recognize the importance and relevanceofHDFS.         CO3       Create efficient application using Pig and Oozie.         Mapping of Course Outcomes with Program Outcomes (POS)         COs/POs       PO1       PO11       PO12         CO3       PO2       PO3       PO6       PO7       PO8       9       PO10       PO11       PO122         COs/POs       PO1       PO11       PO12         COs/POs       PO1       PO11       PO12         COs/POS       PO10       PO11       PO12         COs/POS       PO10       PO11       PO12         COs/POS       PSO1       PSO5       PSO6       PO10       PO11       PO12         COs/POS					21		ormats								
COURSE OUTCOMES (COs) : (3-5)CO1Understand the application of distributed file system.CO2Recognize the importance and relevance of HDFS.CO3Create efficient application using Pig and Oozie.Mapping of Course Outcomes with Program Outcomes (POS)COs/POSPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12CO1MHHHMMMHHHCO2PO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12COs/POsPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12CO1MHHHMMMHHHCO2HMHHMMMHHMMCO3HHHMMMHHHMMCO3HHHMHMMMMMCO3PSO1PSO2PSO3PSO4PSO5PSO6CO1HHHMHHHHCO3HHHMMMMImage: Sign colspan="6">Sign colspan="6">				-	•	JOSOI	Flume	and Sa	000						
CO1Understand the application of distributed file system.CO2Recognize the importanceandrelevanceofHDFS.CO3Create efficient application using Pig and Oozie.Mapping of Course Outcomes with Program Outcomes (POs)COs/POsPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12COs/POsPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12COs/POSPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12COs/POSPO1PO2PO3PO4PO5PO6PO7PO8POPOPO10PO11PO12CO1MHHHMMMHHHCO3HHHMMMHHHCO3HHMMMHHMMMCO3PSO1PSO2PSO3PSO3PSO4PSO5PSO6PSOsPSO1HHMHMHHHCO3HHHMHHCO1HHHMHCO2MMHHMM<					-	NUSQL,	, Fiume	and Sq	oop						
CO2Recognize the importance and relevance of HDFS.CO3Create efficient application using Pig and Oozie.Mapping of Course Outcomes with Program Outcomes (POs)POCOs/POsPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12CO1MHHHMMMHMHHCO2HMHMHMMHMMCO3HHMHMMMHHCO3HHMHMMMHHCO3PSO1PSO2PSO3PSO4PSO5PSO6CO1HHMHMMHHCO3HHHMHMMCO3HHHMHHMCO3HHHMHHCO3HHHHMHCO3HHHHHCO3HHHHHMHHHHHCO3HHHHHMHHHHMHHHHMHHHHMHHHMHHH </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>on of di</td> <td>stribute</td> <td>d file s</td> <td>etem</td> <td></td> <td></td> <td></td> <td></td> <td></td>						on of di	stribute	d file s	etem						
CO3Create efficient application using Pig and Oozie.Mapping of Course Outcomes with Program Outcomes (POs)COs/POsPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12CO1MHHHHMMMHMHHCO2HMHHMMMHMMMCO3HHMHMMMHHHCO3HHMHMMHHCO3PSO1PSO2PSO3PSO4PSO5PSO6CO1HHMHMMHCO2MMHHMMCO3HHHHMMCO3HHHHMMCO3HHHHMMCO3HHHHMCO3HHHHMH/M/L indicates Strength of CorrelationH-High, M- Medium, L-LowIIIICO3FFFFFCO3FFFFFCO3FFFFFFFFFFFFFFFFFFFFFFFFF					_			-							
Mapping of Course Outcomes with Program Outcomes (POs)COs/POsPO1PO2PO3PO4PO5PO6PO7PO8POPO10PO11PO12CO1MHHHHMMMHMHHCO2HMHHMMMHMMMCO3HHMHMMMHMMCO3HHMHMMHHCO5/PSO1PSO2PSO3PSO4PSO5PSO6CO1HHMHMMMCO2MMHMMMCO3HHHHMMMCO3HHHHMMCO3HHHHMMCO3HHHHMCO3HHHHMH/M/L indicates Strength of CorrelationH-High, M- Medium, L-LowIIICO3FIFIFIFICO3FIFIFIFICO3FIFIFIFICO3FIFIFIFICO3FIFIFIFICO3FIFIFIFIFIFIFIFIFIFIFIFIFIFI <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>															
$\begin{array}{c c c c c c c c c c c c c c c c c c c $							<u> </u>		e.						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Mapping of	Course	e Outco	mes wit	n Progi	am Ou	tcomes	s (POs)	1		1				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8		P	<b>O10</b>	PO11	PO12	
CO3     H     H     M     H     H     M     M     M     M     H     M     H     H       COs / PSOs     PSO1     PSO2     PSO3     PSO4     PSO5     PSO6       CO1     H     H     M     H     M     M     M       CO2     M     M     H     M     H     H       CO3     H     H     H     M     M     M       CO3     H     H     H     M     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low     Itips     Itips     Itips       Model     So     So     So     So     Itips     Itips     Itips	CO1	Μ	Н	Н	Н	Н	Μ	Μ	Μ	Η		Μ	Н	Н	
COs / PSOs     PSO1     PSO2     PSO3     PSO4     PSO5     PSO6       CO1     H     H     M     H     M     M       CO2     M     M     H     M     H     H       CO3     H     H     H     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low     Image: Strength of Correlation     Image: Strength of Correlation	CO2	Η	Μ	Н	Μ	Н	Μ	Μ	Н	Μ		Η	Μ	Μ	
PSOsPSO1PSO2PSO3PSO4PSO5PSO6C01HHMHMMC02MMHMHHC03HHHMMH/M/L indicates Strength of CorrelationH- High, M- Medium, L-LowImage: Strength of CorrelationImage: Strength	CO3	Η	H	Μ	Η	Н	Μ	Μ	Μ	Η		Μ	Η	Η	
CO1     H     H     M     H     M     M       CO2     M     M     H     M     H     H       CO3     H     H     H     M     M     M       CO3     H     H     H     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low		PS	01	PSC	02	PS	03	PS	04	P	PSO	5	P	506	
CO2     M     M     H     M     H       CO3     H     H     H     M     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low		]	H	Н	[	N	Л	J	H		Μ			М	
CO3     H     H     H     M     M       H/M/L indicates Strength of Correlation     H- High, M- Medium, L-Low       Algorithm     Reprint Strength     Image: Strength     Social     Strength       Algorithm     Social     Social     Social     Social     Social															
sgory es Bciences nd Social nd Social es es es sject Y Technical Skill				H	[	I	I				Μ			М	
sgory es Bciences nd Social nd Social es es es sject Y Technical Skill	H/M/L indic	cates St	rength	of Corre	elation	H-H	igh, M-	Mediu	<b>m, L-</b> ]	Low					
	Category	Basic Sciences	-	Humanities and Social Sciences	Program Core	Program Electives	Open Electives			Soft Skills					



**2018 Regulation** 

SUBJECT CODE	SUBJECT NAME	Ty / Lb	L	T/ S.Lr	P/R	С
BCS18E28	HADOOP DISTRIBUTED FILE SYSTEM	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To understand the concepts of Distributed file system
- To acquire knowledge about Hbase, YARN, PIG and OOZIE
- To understand MapReduce types and formats
- To examine Hadoop Usage
- To understand the concepts of NoSQL, Flume and Sqoop

#### UNIT I **Hadoop Introduction**

Distributed and parallel computing - HDFS and MapReduce - Hadoop function - cloud deployment and delivery model - In memory computing technology - Hadoop ecosystem - Hadoop distributed file system - HDFS architecture - HDFS files - HDFS high availability - Hadoop YARN - Hbase and HDFS - Hive - Pig - Sqoop - ZooKeeper - Flume - Oozie.

#### MapReduce, HBase And Big Data Technology **UNIT II**

MapReduce framework – optimaize MapReduce job – roles of HBase in Big Data Processing. Big Data stack - Virtualization and Big Data - Virtualization Approaches - CAP Theorem - non-relational database - polyglot persistence - Big Data analytics and Data warehouse - simple MapReduce application designing MapReduce.

#### UNIT III **YARN And Hive**

Background of YARN - Advantages - Architecture -schedulers - configurations - commands - YARN containers - Registry - Hive Services - data types - built in functions - Hive DDL - data manipulation in Hive – Data retrieval Queries – using JOINS in Hive.

#### **UNIT IV Pig And Oozie**

Pig architecture - running Pig - Pig Latin - working with operators in Pig - Debugging Pig - functions in pig – Error Handling in Pig – Oozie – benefits – configuration – Oozie workflow – Oozie coordinator – Oozie bundle - Oozie parameterization - Oozie job execution model - Oozie SLA.

#### NosQL, Flume And Sqoop UNIT V

Characteristics of NoSQL – Types of NoSQL data Models – Schema less databases – materialized view – distribution models - sharding - Flume - Flume Architecture - Sqoop - importing data - Mahout machine learning - collaborative filtering - clustering - classification - Mahout algorithms - Environment for Mahout

#### **TEXT BOOKS:**

1. DT Editorial Services, 2016 "Big Data Black Book" dreamteck press.

2. Alex Holmes, 2015 "Hadoop in Practice" dreamteck press.

### **REFERENCE BOOKS:**

- 1. Tom White, 2015 "Hadoop The Definitive Guide 4th edition Oreilly.
- 2. Shiva Achari 2015 "Hadoop Essentials" Packt Publishing.
- 3. Henry H Liu, 2014 "Hadoop 2 Essential" Creative Independent Publishing.
- 4. Jeffrey Aren, 2017 "Sams Teach Yourself Hadoop in 24 hours" Pearson.

### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

#### 9Hrs

**Total Hours: 45** 

# 9Hrs

# 9Hrs

# 9hrs



				20	)18 Reg	gulatio	n						
Subject Code:	Su	bject N							Ty/	L	T/	P/R	<b>C</b>
BCS18E29			MOB	ILE I	DATAL	BASES			Lb/		S.L		
	Dre	roquici	te: BCS	518004					ETL Ty	3	<b>r</b> 0/0	0/0	3
L : Lecture T : Tuto						P · Pro	iect R	· Rese	arch C: 0			0/0	5
T/L/ETL : Theory/I			-		-	1.110		. Resea		cicu	115		
<b>OBJECTIVES</b> :		libeauc		y and i	Lau								
• To learn ab	out the	funda	mentale	of dist	ributed	l datab	2000						
<ul><li>To learn ab</li><li>To understa</li></ul>							1505						
<ul> <li>To learn ab</li> </ul>			-		-		v Cont	rol me	chanism	S			
<ul> <li>To study m</li> </ul>				-			•				dcast s	scheme	s
COURSE OUTCO					1								~
CO1		· ·			ent a d	comple	te pro	hlem s	olution	usir	o cur	rent da	tabase
001		echnol		npienk	in a v	compie	te pro		orution	usii	ig cui	ioni ui	nabase
CO2				ment a	nd mai	ntain d	atabase	e securi	ity mech	nanis	ms		
CO3		-	-						ile datał			logy.	
Mapping of Cours						-	-					0,	
COs/POs	<b>PO1</b>	PO	PO	PO	PO	PO	PO	PO8	PO	PO	010	PO1	<b>PO1</b>
	101	2	3	4	5	6	7	100	9	10		1	2
CO1	Н	Н	H	Н	Н	H	Μ	Н	H	Н		H	Н
CO2	Μ	Н	Μ	Н	Н	Μ		Μ	Μ	Μ	]	L	L
CO3	Н	Μ	Η	Μ	Μ	Η	Н	Н		L	]	М	Μ
COs / PSOs	PS	601	PS	02	PS	03	PS	<b>SO4</b>	Р	SO5		PS	06
CO1	Μ				Н		H		Н		]	H	
CO2	Н		H		Μ		L		Н		]	L	
CO3	Н		Μ		Н		H		Н		]	H	
H/M/L indicates S	trengt	h of Co	orrelati	on H	- High	, M- N	lediun	ı, L-Lo	w				
	0							Π					
								Ski					
			al					cal					
		ces	oci					nic					
ory		ien	Š		ves		sct	ect					
ego	ces	Sc	anc	re	cti	ves	roje	L / 1					
Category	ienc	ing	ies	C	Ele	cti	/ P	uips	ls				
	Sci	leer	miti	am	am	Ele	cal	'nsł	skil				
	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
	$\mathbf{B}_{a}$	En	Hu Sc	$\mathbf{P}_{\mathbf{r}}$		Ō	Pr	I1	So				
					~					1			



**2018 Regulation** 

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E29	MOBILE DATABASES	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To learn about the fundamentals of distributed databases
- To understand Data Processing and mobility models
- To learn about the Data Consistency and Concurrency Control mechanisms
- To study mobile Database Recovery techniques and Wireless Information Broadcast schemes 9Hrs

#### UNIT I Introduction

Fully connected information space - Types of Mobility - Wireless Network Communication. Radio Frequency: Spectrum and Band - Cellular Communication - Continuous Connectivity - Structure of a Channel – Absence of Free Channel – Signal Fading – Frequency Reuse – PCS and GSM – PCS Personal Communication Service - Interface - Call Processing - GSM Global System for Mobile Communication - Location and Handoff Management - Location Management - Handoff Management - Roaming.

#### UNIT II **Fundamentals of Distributed Databases**

Conventional Database Architecture - Database Partition and Distribution - Database Processing -Transaction Structure - Serialization of Transactions - Serializability - Based Correctness Criteria -Serializability Theory - Degree of Isolation - Advanced Transaction Model - Nested Transaction Model - SAGA - Cooperative Transaction - ConTract - Flex Transaction - Introduction to Concurrency Control Mechanisms - Ways of Locking Data Items - The Phantom Problem - Multigranularity Locking -Heuristic Approach in Locking Schemes - Non-Locking Based Schemes

#### **UNIT III Data Processing and Mobility**

Effect of Mobility on the Management of Data – Transaction Management in Mobile Database Systems – Mobile Database System - Transaction Execution in MDS - Mobile Transaction Model - Execution Model based on ACID Transaction 230 CS-Engg&Tech-SRM-2013 Framework – Pre-write Transaction Execution Model - Mobile Transaction Models - HiCoMo - Moflex - Kangaroo - MDSTPM Transaction Execution Model – Mobilaction – Atomicity for Mobilaction – Isolation for Mobilaction – Consistency and Durability for Mobilaction

#### UNIT IV **Data Consistency and Concurrency**

Data Consistency in intermittent |Connectivity - The Consistency Model - Weak Connectivity Operation - A Consistency Restoration Schema - Concurrency Control Mechanism - Transaction Commit -Commitment of Mobile Transactions – Transaction Commitment in Mobile Database Systems.

#### UNIT V **Mobile Database Recovery**

Log Management in Mobile Database Systems - Mobile Database Recovery Schemes - Wireless information Broadcast – introduction – Broadcast Disk – Broadcast Infrastructure – Exponential Index – Location-Based Indexing - OnDemand Data Scheduling - Data Dissemination System.

#### **TEXT BOOK:**

1. Vijay Kumar, 2006 "Mobile Database Systems", Wiley Inderscience Publication, 2006 **REFERENCE BOOKS:** 

- 1. Leong (Hong VA), 1999 Lee (Wang Chen), "Mobile Data Access", Springer.
- 2. Rifaat A. Dayem, 1997 "Mobile Data & Wireless LAN Technologies", Prentice Hall Inc.
- 3. TAN(Kian Lee), Franklin(Michael J), "Mobile Data Management", Springer.

#### 9Hrs

9Hrs

#### 9Hrs

**Total Hours: 45** 



G 1 • 4	0	1	T		201	8 Regu	lation			T	<b>TF</b> (	D/D	0
Subject Code:	SI	ıbject N		D ENC	INEEI	DINC			Ty/	L	T/	P/R	C
BCS18E30			VV E.	DENG		MING			Lb/		S.Lı	•	
DC510E50	D	•		0100					ETL	2	0/0	0/0	2
T . T			te: BIT		11		Ducie		Ту	3	$\frac{0/0}{0}$	0/0	3
L : Lecture '							: Projec	CTR:	Researc	n C:	Credits		
T/L/ETL : T		Lad/EII	ibedded	Theory	and La	iD							
OBJECTIVE		to onol	viza and	dagion	00000	ahanair	ia ariata	ma fo	n tha an	ontin	n diaca	mination	atomaga
			of electro					ems 10	r the cr	eatio	n, disse	mination	, storage,
								la lano		usad t	o manii	vulata in	formation
			e Web –						guages t	iseu i	.0 manij		lormation
									nrona	· one	rability	maintar	ance and
			applicati		on met	1105 101	clisuii	ng un	e proper	ope	raomty,	manner	lance and
COURSE (	-												
COURSE C			e web e		ing ma	thodolo	mies fo	r Wah	annlica	tion	davalor	mont	
CO1 CO2													be such a
02		olution.		onent	Daseu	web so		and us		² ula	granns u	uescin	be such a
CO3			and disc	use the	coourit	u miale a	foWo	h annl	instian				
Mapping of						•			ication.				
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO		PO10	PO11	PO12
CO3/1 O3	M	M	H	M	M	H	M	M			L	M	M
CO2	M	M	M	H	M	M	M	M	H		M	M	M
CO3	H	L	M	H	H	L	L	L	N		H	L	L
000									14.	-		12	
COs /	P	501	PS	02	PS	03	P	504		PSC	)5	Р	SO6
PSOs	1.		15	02	15	00	1.			IDC		-	500
CO1	1	M	N	ſ	N	M		H		H			H
CO2		M	N			L		M		M			M
CO3		L	I			<u> </u>		M		L			L
H/M/L indi									L-Low				L
								Ski					
		s	cial					cal					
		lce	Soc					mic					
~		ier			ves		ect	ech					
jory	ces	S	ano	ore	ecti	ves	roj	/ T					
Category	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	ls				
Ca	Sc	eer	Humanit	am	am	Εľ	cal	ida	Soft Skills				
	sic	gin	enc	)gr;	)gr;	en	icti	ern	ft S				
	Ba	En	Hu Sci	Prc	Prc	Op	$\Pr$	Int	So				
					~								
		1	I	I	I	I	L	L	L	1		1	l



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E30	WEB ENGINEERING	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To be able to analyze and design comprehensive systems for the creation, dissemination, storage, retrieval, and use of electronic records and documents
- To learn and use some of the client-side and server-side languages used to manipulate information on the World Wide Web i.e. ASP.NET, and Javascript.
- To learn techniques and evaluation metrics for ensuring the proper operability, maintenance and security of a web application.

#### UNIT I Web-Based Systems

The Web-Web Applications-Web Engineering-The Components of Web Engineering

#### UNIT II A Web Engineering Process

Defining the Framework-Incremental Process Flow- Generic Actions and Tasks for the Web Framework-Umbrella Activities

#### UNIT III Communication

The Communication Activity - Formulation - Elicitation- Identifying Web App Increments- Negotiation

#### UNIT IV Planning

Refining Framework Activities-Building a Web Team - Managing Risk - Developing a Schedule

#### UNIT V The Modelling Activity:

Modelling as a Concept - Modelling Frameworks - Modelling Languages - Existing Modelling Approaches Total Hours: 45

#### **TEXT BOOK:**

1. Web Engineering: A Practitioner's Approach by Roger Pressman and David Lowe, McGraw-Hill, 2009.

#### **REFERENCE BOOKS:**

- 1. Denise M. Woods and William J. Dorin 2012 HTML and CSS: Comprehensive 7th edition,. Publisher: Cengage Learning; ISBN-10: 1133526144
- 2. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, 2012 Internet & World Wide Web How to Program, 5/e Pearson Education.

# 9 Hrs

9 Hrs

# 9 Hrs

#### 9 Hrs



	0	1			2018 6				<b>m</b> /	-	<b>T</b> (	<b>D</b> / <b>D</b>	a
Subject Code:	Su	bject Na							Ty/	L	<b>T</b> /	P/R	C
BCS18E31			4	G NEI	WOR	KS			Lb/		S.Lr		
									ETL				
	Pre	erequisi	te: BIT	T18I01					Ту	3	0/0	0/0	3
L : Lecture T : T	<b>Tutorial</b>	S.Lr	: Super	vised I	earning	g P:P	roject I	R : Re	search (	C: Cr	edits		
T / L/ ETL : The	eory/La	ub/Embe	edded T	heory	and Lat	0	-						
<b>OBJECTIVES</b>	:												
To unde	erstand	the late	st techr	nology	in mobi	ile com	munica	tion.					
To know	<i>w</i> recen	t develo	opment	in wire	eless co	mmuni	cation.						
To under	erstand	the high	h speed	data co	ommun	ication	through	n wire	less net	work			
To learn	the te	chnolog	y behir	nd VoL	TE, Vo	IP tech	nology						
COURSE OUT													
CO1		ble to d			chnolog	gy in w	ireless o	comm	unicatio	on			
CO2		apable	-										
CO3	A	ble to d	lesign n	ew air	interfac	ce for e	ffective	comr	nunicati	on ir	n mobile	technol	ogy
Mapping of Co	urse O	utcom	es with	Progra	am Out	tcomes	(POs)						
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	POS	B PO	9	PO10	PO11	PO12
CO1	Η	Μ	Η	L	Н	Μ	Μ	Η	H		Η	Н	Μ
CO2	Η	Μ	Μ	Μ	Η	Η	Μ	Μ	H		Η	Η	Μ
CO3	Η	Η	Η	Μ	L	Η	Μ	Μ	Н		Μ	Η	Μ
COs / PSOs	PS	01	PS	02	PS	03	PS	04		PSO	5	PS	06
CO1		H	N	1	N	Λ		H		Η		E	[
CO2	-	-	-	I	N	Λ	N	Л		Η		Ν	1
		H	H										
CO3	I	H	N	1	N	A	Ν	Л		H		N	1
	I	H	N	1	N	A		/I m, L-	Low				1
CO3	I	H	N	1	N	A	Ν	/I m, L-	Low				1
CO3	I	H	N Correl	1	N	A	Ν	/I m, L-	Low				1
CO3	I	H ngth of	N Correl	1	N	A	Ν	/I m, L-	Low				<u>I</u>
CO3	I	H ngth of	Social N	1	N H- Hi	A	Nediu	/I m, L-	Low				<u>I</u>
CO3 H/M/L indicate	I es Strei	H ngth of	Social N	/I ation	N H- Hi	M gh, M-	Nediu	/I m, L-	Low				<u>I</u>
CO3 H/M/L indicate	I es Strei	H ngth of	Social N	/I ation	N H- Hi	M gh, M-	Nediu	/I m, L-	Low				<u>I</u>
CO3 H/M/L indicate	I es Strei	H ngth of	es and Social <b>N</b>	/I ation	N H- Hi	M gh, M-	Nediu	/I m, L-					<u>I</u>
CO3	I es Strei	H ngth of	es and Social <b>N</b>	/I ation	N H- Hi	M gh, M-	Nediu	/I m, L-					<u>I</u>
CO3 H/M/L indicate	I es Strei	H ngth of	es and Social <b>N</b>	/I ation	N H- Hi	M gh, M-	Nediu	/I m, L-					<u>I</u>
CO3 H/M/L indicate	I	H	N Correl	A ation Core	Program Electives	A	Ν	Л	Soft Skills				<u>I</u>
CO3 H/M/L indicate	I es Strei	H ngth of	es and Social <b>N</b>	/I ation	N H- Hi	M gh, M-	Nediu	/I m, L-					<u>I</u>



**2018 Regulation** 

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E31	4G NETWORKS	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To understand the latest technology in mobile communication. •
- To know recent development in wireless communication.
- To understand the high speed data communication through wireless network
- To learn the technology behind VoLTE, VoIP technology •

#### UNIT I LTE Network Architecture and Protocols

Evolution of 3GPP Standards-Radio Interface Techniques in 3GPP Systems-Radio Access Mode Operations-Spectrum Allocation in UMTS and LTE-EPS Interfaces-EPS Protocols and Planes-EPS Procedures.

#### UNIT II LTE Air Interface and Procedures

LTE Protocol Stack - SDU and PDU - LTE Radio Resource Control (RRC) - LTE Packet Data Convergence Protocol Layer (PDCP)- LTE Radio Link Control (RLC)- LTE Medium Access Control (MAC) - LTE Physical Layer (PHY)- Channel Mapping of Protocol Layers- LTE Air Interface

#### UNIT III **Analysis and Optimization of LTE System Performance**

Deployment Optimization Processes - LTE Performance Analysis Based on Field Measurements - LTE Case Studies and Troubleshooting- LTE Inter-RAT Cell Reselection- Inter-RAT Cell Reselection Optimization Considerations- LTE to LTE Inter-frequency Cell Reselection- LTE Connected Mode Discontinuous Reception - Circuit Switch Fallback (CSFB) for LTE Voice Calls- Multiple-Input, Multiple-Output (MIMO) Techniques.

#### UNIT IV **Coverage And Capacity Planning Of 4G Networks**

LTE System Foundation- PCI and TA Planning- PRACH Planning- Coverage Planning- LTE Throughput and Capacity Analysis.

#### UNIT V **Voice Evolution in 4G Networks**

Voice over IP Basics- Voice Options for LTE- IMS Single Radio Voice Call Continuity- VoLTE Features-Deployment Considerations for VoLTE. Carrier Aggregation- Enhanced MIMO.

#### **TEXT BOOK:**

1. Design, Deployment and Performance of 4G-LTE Networks- A Practical Approach- Ayman Elnashar Emirates Integrated Telecomms Co., UAE- Mohamed A. El-saidny QUALCOMM Technologies, Inc., USA- Mahmoud R. Sherif Emirates Integrated Telecomms Co., UAE. Wiley Publication.

#### **REFERENCE BOOK:**

1. Clint Smith, P.E., Daniel Collins, Wireless Networks: Design and Integration for TE, EVDO, HSPA and WiMax Third Generation.

#### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

# 9 Hrs

9 Hrs

9Hrs

# 9 Hrs

### 9 Hrs

### **Total Hours: 45**



					2018	8 Regul	ation			, ,			
Subject	Su	bject N						~	Ty/	L	<b>T</b> /	P/R	C
Code:		ENT	ERPRIS	SE RES	OURC	E PLA	NNING	τ <b>΄</b>	Lb/		S.Lr	•	
BCS18E32									ETL				_
			ite: NIL						Ту	3	0/0	0/0	3
L : Lecture T T/L/ETL : TI						•	Project	R : Res	earch C:	Cre	dits		
OBJECTIV	ES :												
• Knov	w basic	busine	ss functio	onal are	as and e	explain	s how th	ney are	related.				
			•		•			<b>.</b> .					integrated
					ompany	^v prospe	er by p	rovidin	g busine	ess n	nanage	ers with	accurate
			ent data.		51		2						
													processe
COURSE O			$\frac{1}{2}$ in using		ontware	that ca	n be app	plied in	further c	cours	sework	<u> </u>	
	-	,	, , ,	-	· ·	• • •	1 (1	1	<u></u>	<u>.</u> .	( 1 A	1.4	
CO1			grate Bus		•								
CO2			how tec	hnology	has ev	volved	and the	e reasor	why ex	xistii	ng sys	tems ar	e the way
	they												
CO3			the syne							syst	ems ai	nd how	this
			be best e					•	n				
Mapping of													
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9			PO11	PO12
CO1	Н	Μ	Н	H	Н	H	Н	L	Н	Μ		H	Н
CO2	Η	H	Н	Μ	Н	H	Η	Μ	Н	Η		Η	Η
CO3	Η	Μ	H	Η	Η	Μ	Η	L	Η	Μ		Η	Η
COs /	PS	01	PS	02	PS	03	PS	<b>504</b>	PS	505		Р	SO6
PSOs													
CO1	Н		H		Н		Η		Μ			H	
CO2	Н		Н		Μ		Η		Μ			Μ	
CO3	Η		H		Η		Μ		Η			Η	
H/M/L indic	cates St	rength	of Corr	elation	H- H	igh, M	- Mediı	ım, L-l	Jow				
			es										
			suce					kill					
			Social Sciences					I S					
			al					nica					
<b>y</b>		ces	oci					chr					
108		ien			ves		sct	Te					
Category	ces	Sc	anc	re	scti	ves	rojć	Internships / Technical Skill					
J	ien(	ing	ies	Co	Еle	scti	/ <b>P</b> .	shi	ls				
	Sci	leer	mit	am	am	Ele	cal	ern	Kil				
	Basic Sciences	Engineering Sciences	Humanities and	Program Core	Program Electives	Open Electives	Practical / Project	Int	Soft Skills				
	Ba	En	Hu	Prí	Pr(	Op	$\Pr_{i}$		So				
F													



#### 2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E32	ENTERPRISE RESOURCE PLANNING	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- Know basic business functional areas and explains how they are related.
- Illustrate how unintegrated information systems fail to support business decision and how integrated information systems can help a company prosper by providing business managers with accurate, consistent, and current data.
- Understand how Enterprise Resource Planning software is used to optimize business processes Acquire experience in using ERP software that can be applied in further coursework

#### UNIT I Introduction

Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems - Case studies.

#### UNIT II ERP Solutions And Functional Modules

Overview of ERP software solutions- Small medium and large enterprise vendor solutions, BPR, Business Engineering and best Business practices - Business process Management. Overview of ERP modules -sales and Marketing, Accounting and Finance, Materials and Production management etc. -Case studies.

#### UNIT III ERP Implementation

Planning Evaluation and selection of ERP systems-Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration. People Organization in implementation-Consultants, Vendors and Employees-Case studies.

#### UNIT IV Post Implementation

Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of and ERP Implementation -case studies.

#### UNIT V Emerging Trends on ERP

Extended ERP systems and ERP bolt -on -CRM, SCM, Business analytics etc- Future trends in ERP systems-web enabled, Wireless technologies so on-Case studies.

#### **TEXT BOOK:**

1. Alexis Leon, 2006 ERP demystified, second Edition Tata McGraw-Hill.

#### **REFERENCE BOOKS:**

- 1. Jagan Nathan Vaman, 2008 ERP in Practice, Tata McGraw-Hill.
- 2. Alexis Leon, 2008 Enterprise Resource Planning, second edition, Tata McGraw-Hill.
- 3. Mahadeo Jaiswal and Ganesh Vanapalli, 2006 ERP Macmillan India.
- 4. Vinod Kumar Grag and N.K. Venkitakrishnan,2006, ERP- Concepts and Practice, Prentice Hall of India.
- 5. Summer, 2008 ERP, Pearson Education.

### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

#### 9 Hrs

9 Hrs

9 Hrs

9 Hrs

#### 9 Hrs

### Total Hours: 45



					201	8 Regu	lauo	1					-	
Subject Cod BCS18E33	e: Su	bject N SUI	ame : PPLY C	HAIN	MANA	GEME	NT		I	ſy/ Lb/ TL	L	T/ S.Lr	P/R	C
	Pro	erequisi	te: NIL							Гу	3	0/0	0/0	3
L : Lecture T				ervised	Learnii	ng P:F	Projec	t R			-		0, 0	-
T/L/ETL : Th			-			•	5							
OBJECTIV	E :													
• This	will pr	ovide th	ne founda	tion for	design	n and an	alysi	s of s	supply	v chai	ns.			
• For s	tudents	s to anal	lytically s	solve pr	oblems	s related	l to ir	vent	ory m	anage	ement	, facilit	у	
• locat	ion, an	d supply	y chain o	ptimiza	tion.					-				
• To ut	ilize co	omputer	resource	es to res	search a	and anal	lyze s	uppl	y cha	in ope	eration	ns.		
													and the	ir impact
			nagemen				0							
			C											
COURSE O	UTCO	MES (	$\overline{COs}$ : (	3-5)										
CO1	Unde	rstand r	ecent tre	nds in g	green le	gislatio	n wit	h res	pect t	o sup	ply cł	nains.		
CO2	Unde	rstand t	he enviro	onmenta	al impa	cts of s	upply	/ cha	ins a	nd hei	nce th	ne need	for gree	en supply
	chain	S												
CO3			en practi		ed on g	green leg	gislat	ion,	into s	upply	chair	n activit	es for	
			evelopm											
Mapping of			1			1	1			1		r		T
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO	7   I	<b>PO8</b>	P 09	PO	10	PO11	PO12
CO1	Н	Н	Н	Н	Μ	Н	Η	I		Н	Μ		Н	Н
CO2	Н	Н	Μ	Η	Н	Η	Η	Ι	N	Η	Μ		H	Н
CO3	Η	Η	Н	Η	Μ	Μ	Η	Ι		Η	Μ		H	Н
COs / PSOs	]	PSO1	I	PSO2		PSO3		I	PSO4		P	SO5	]	PSO6
CO1	Η		Н		Η			Η			L		Μ	
CO2	Η		Η		Μ			Η			Η		Μ	
CO3	Η		Н		Μ			H			Η		Η	
H/M/L indic	ates St	rength	of Corre	elation	H- H	l <mark>igh, M</mark>	- Me	dium	ı, L-L	ow				
									Skill					
			_											
		es	Social						ica					
~		suc	So		es		t	,	hn					
Category	SS	Sci	nd	n)	tiv	Se	)je(		Tec					
lteg	nce	ja ja	s a	Ore	llec	tiv	Pr(		s/'					
Ca	cie	erit	itie	n C	пE	lec	ıl /		ills					
	c S	ine	nan nce	rar	rar	пE	tice		Sk					
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project		<u>Internships / Technical</u> Soft Skills					
ŀ	В	Щ	ŇΗ	<u> </u>		0	Ъ.		S II					
					V	1	1				1			



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E33	SUPPLY CHAIN MANAGEMENT	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- This will provide the foundation for design and analysis of supply chains.
- For students to analytically solve problems related to inventory management, facility
- location, and supply chain optimization.
- To utilize computer resources to research and analyze supply chain operations.
- To understand the global environment and strategic alliances in modern business and their impact on supply chain management.

#### UNIT I Introduction

Defining Supply Chain management and logistics management. Evolution. Supply Chain – Fundamentals, , and Importance. Supply chain strategy, Enablers/ Drivers of Supply Chain Performance. Supply Chain relationships.

#### UNIT II Logistics Management

Logistics – functions, objectives, solution. Customer Service. Warehousing and Material Storage, Material Handling, Transportation and Packaging – 3PL and 4PL.

#### UNIT III Network Design

Distribution Network Design – Role, Factors Influencing, Options, Value Additions. Models for Facility Location and Capacity allocation. Impact of uncertainty on Network Design. Network Design decisions using Decision trees.

#### UNIT IV Sourcing And Inventory Management

Sourcing – Make vs buy decision, Creating World Class Supply base, World Wide Sourcing Inventory Management – managing cycle inventory, safety inventory. Value of information, Bullwhip effect, Coordination in supply chain, Analysing impact of supply chain redesign on the inventory.

### UNIT V Current Trends

E-Business – Framework and Role of Supply Chain in e- business and b2b practices. Supply Chain IT Framework.E-Supply Chains, E – Logistics- eSRM, eLRM, eSCM, Agile Supply Chains. Reverse Logistics, Global Logistics.

#### **Total Hours: 45**

### **TEXT BOOKS:**

- 1. Bowersox Donald J, 2000 Logistical Management The Integrated Supply Chain Process" Tata McGraw Hill.
- 2. Sunil Chopra and Peter Meindl, 2007 Supply Chain Management-Strategy Planning and Operation, Prentice Hall.

#### **REFERENCE BOOKS:**

- 1. Donald J. Bowersox, David J. Closs and M. Bixby Cooper, 2008 "Supply Chain Logistics Management", Tata McGraw Hill.
- 2. Altekar Rahul V, 2005 Supply Chain Management-Concept and Cases, Prentice Hall India.

### 9 Hrs

## 9 Hrs

### 9 Hrs

## 9 Hrs



Subject Code: BCS18E34	Su	ibject N N		RAM	E COM	regulat			Ty/ Lb/ ETL	L	T/ S.Lr	P/R	C
	Pr	erequisi	ite: BCS	S18004					Ту	3	0/0	0/0	3
L : Lecture T : 7	Futorial	S.Lr	: Super	vised I	earning	g P:P	roject l	R : Re	search (	C: Cı	redits		
T/L/ETL : Theo		/Embed	ded Th	eory an	ld Lab								
OBJECTIVES													
To unde			-			/SAM	and ID	CAMS					
• To stud	•												
• To unde	erstand	CICS a	nd supp	oly tran	saction	S							
<b>COURSE OUT</b>	COM	ES (CO	<b>s</b> ):(3	- 5)									
CO1				1					d IDCA				
CO2								ns to p	rocess f	ïles.			
CO3		Indersta											
Mapping of Co								•					
COs/POs	<b>PO1</b>	PO2			PO5	<b>PO6</b>	<b>PO7</b>	PO8	PO9	)	PO10	PO11	PO12
CO1	Н	Η	Η	Η	Μ	Η	Μ	Μ	H		Μ	Н	Н
CO2	H	Η	Н	Η	Μ	Η	Μ	Μ	H		Н	Н	Н
CO3	H	H	H	Μ	Μ	Μ	Μ	Μ	H		Н	Η	Μ
COs / PSOs		01		02		03		<b>504</b>		PSC			06
CO1		H	ŀ		I			H		H			I
CO2		H		I		Л		H		Μ			1
CO3		H	I			Л		H		H			I
H/M/L indicate	es Strei	ngth of	Correl	ation	H- Hi	gh, M-	Mediu	í Á T	Low			[	
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skil	Soft Skills				
					~								



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E34	MAINFRAME COMPUTING	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To understand the concepts of MVS, JCL, VSAM and IDCAMS
- To study the details of COBOL and DB2
- To understand CICS and supply transactions

#### UNIT I MVS Concepts

Main frame in Todays Business -Introduction to Z series H/W, Z/OS .- MVS overview-system initialization-storage management-job management ISPF Editor ISPF Data Utility Functions -managing work-data management-I/O processing-termination and recovery.TSO commands-general syntax of JCL statements

#### UNIT II JCL and VSAM

Explanation of job statements-explanation of EXEC statements-explanation of DD statements-additional parameters on JOB,EXEC,DD statements-classification-instream and catalog procedures-utilities-abend codes.VSAM data set organization structure-IDCAMS commands-JCL for VSAM-buffering-alternative index-repro-backup and recovery-export and import.

#### UNIT III COBOL/370

# Structured programming constructs-fundamentals of COBOL-data definition-conditional statements-perform statements-compiler option-table definition-COBOL call and parameter passing-file handling.

#### UNIT IV DB2

RDBMS concepts-structural query language-normalisation-DB2 architecture-DB2 objects-locks-program preparation-cursors-null indicators-optimisation - utilities.

#### UNIT V CICS

CICS introduction-terminal control-application house keeping-EXEC, interface locks-supply transactions – CESM, CESF, CEMT, CEDF-NMDS-BMS-abend codes-file control-program control-TSQ-TDQ-pseudo conversation-recovery and roll back.

#### **TEXT BOOKS:**

- 1. Mike Ebbers, John Kettner, WayneO'Brien, Bill Ogden, (2011) Introduction to the New Mainframe: z/OSBasics, IBM Redbooks(SG24-6366-01)
- 2. Alexis Leon, IBM Mainframe Handbook, vikas Publishing, 2014

#### **REFERNCE BOOKS:**

- 1. M.K. Roy and D.GoshDastidar ,(2006) COBOL PROGRAMMING, John Wiley And Sons
- 2. Stern & Stern (2007) STRUCTURED COBOL PROGRAMMING, (8th ed.), JOHN Wiley India
- 3. Grant Allen(2008) Beginning DB2 : from Novice to Professional, Apress
- 4. Mary Lovelace, Jose Dovidauskas, Alvaro Salo, Valerio Sokai, (2012) VSAM Demystified (SG246105)IBM Red Books
- 5. Doug Lowe ,(1994) MVS JCL,(2nd ed.),MIKE MURACH ASSOCIATE

Saba Zamir, ChandanRanade, (2007) MVS JCLPrimer, McGrawhil

### 9Hrs

9Hrs

9 Hrs

9 Hrs

#### 9Hrs

#### **Total Hours: 45**



Subject Code:	S	biect 1	Name :			guiau	<b>, , , , , , , , , , , , , , , , , , , </b>		Ty/	L	Τ/	<b>P</b> /	С
Subject Couct			EURO		Y CO	MPUT	ING		Lb/		S.L	R	U
BCS18E35									ETL		r	N	
	Dr	ereauis	ite: BC	\$18F0	6				Ty	3	0/0	0/0	3
L : Lecture T : Tu						$\mathbf{p} \cdot \mathbf{p}_{r}$	niect R	· Rese	arch C:			0/0	5
Ty/Lb/ETL : Theo							Jeet R	. Rese	aren e.	CIU	1113		
<b>OBJECTIVE :</b>	л у/ <b>L</b> ao			leory a									
• The stude	nts wil	l be ab	le to de	esign ar	nd deve	elon ne	uro fuz	zv moo	leling a	nd w	ill hav	e the al	vility to
understan						nop ne		29 11100	ioning u	10 11	III IIu v	e the a	July to
COURSE OUTC				5)									
CO1		. ,		,	sics of	soft co	mputing	g techn	iques ar	nd al	so thei	r use in	some
			situatic				T		1-20 41				
CO2			e the pr		using	neural	networ	ks tech	niques.				
CO3			•		•				chniques	2			
Mapping of Cour									Innques	,			
COs/POs	PO1	PO	PO	PO	PO	PO	<b>PO</b>	PO8	PO	PC	10	PO11	PO1
005/105	101	$\frac{1}{2}$	3	4	5	6	7	100	9			. 011	2
CO1	Н	H	M	H	H	M	H	Н	M	L		H	H
CO2	Η	H	Μ	Н	Н	Μ	Н	Н	Μ	Μ		H	Н
CO3	Н	Н	Μ	Н	Μ	Μ	Μ	Н	Μ	L		H	Н
COs / PSOs	PS	01	PS	02	PS	03	PS	504	Р	SO5		PS	06
CO1	]	H	I	H	Γ	M	]	H		Η		I	I
CO2	]	H	N	Ν	J	H	]	H		Μ		H	I
CO3	]	H	N	M	_	H		H		Η		I	I
H/M/L indicates	Streng	th of C	orrelat	tion l	H- Hig	<b>h, M-</b> I	Mediur	n, L-L	ow				
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	▲ Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E35	NEURO FUZZY COMPUTING	Ту	3	0/0	0/0	3

#### **OBJECTIVE:**

• The students will be able to design and develop neuro fuzzy modeling and will have the ability to understand Neural Network.

#### UNIT I Neuro – Fuzzy and Soft Computing Fuzzy Systems

Introduction to Fuzzy Sets – Fuzzy Rules and - - Fuzzy Reasoning and - Inference-Fuzzy Inference Systems - Compositional Rules of Inference in Fuzzy System – Defuzzification Strategies , Fuzzy Models– System Identification – Several Least Square Methods – Optimization Techniques- Derivative-based Optimization, Derivative and Free Optimization.

#### UNIT II Regression and Optimization

System Identification – Several Least Square Methods – Optimization Techniques- Derivative-based and Derivative Free Optimization.

#### UNIT III Neural Network

Neural Network Architecture -Network Inputs and Outputs – Feed back Inter Connections and Network Stability – Feed Forward Networks –Back Propagation Networks- Learning Methods- Adaptive Networks – Supervised Learning Neural Networks –RBFN – Unsupervised Learning Networks - Self Organizing maps, Adaptive Resonance Architectures, Radial Basis Networks- LVQM, Principle Component Anlaysis.

### UNIT IV Neuro Fuzzy Modelling

Neural Component of a Fuzzy System – Fuzzy neural Network Controllers – Adaptive Neuro Fuzzy Inference System(ANFIS) – CANFIS – Neural Networks based Fuzzy Inference System - Classification and Regression Tests – Data Clustering Techniques and Algorithms – Rule base Structure Identification

#### UNIT V Artificial Neural Networks Hardware

Implementation Issues – Evaluation of Neural network Architectures – Hardware Realization – VLSI approach – Optical techniques.

#### **TEXT BOOK:**

1. Jyh-shing roger Jang, Chnesy-tasi sur, Eiji Miziltazui," *Neuro and Soft Computing: A Computational Approach to Learning and machine Intelligence*", Pearson Education 2004, Digitized in 2007 ISBN 0132610663, 9780132610667

#### **REFERENCE BOOKS:**

- 1. Timothy J.rass (2011), "Fuzzy Logic with Engineering Application", (3rd ed.)Wiley India,
- 2. S.Rajasekaran , G.A.Vijayalakshmi Pai , Neural N/Ws, Fuzzy Logic and Genetic Algorithm Sysnthesis and Applications, PHI (2004)

#### 9 Hrs

9 Hrs

#### Total Hours: 45

# 9 Hrs

#### 9 Hrs based a



Periyar E.v.K. High Koad, Maduravoyai, Chennai-95. Tamiinadu, India.

### DEPARTMENT OF INFORMATION TECHNOLOGY

				4	2018 R	egulati	on					-	
Subject Code:	Su	bject N							Ty/	L	Τ/	P/R	С
		WE	B CON	ITENI	MAN	AGEN	1ENT		Lb/		S.Lr		
BCS18E36									ЕТ				
									L				
	Pre	erequis	ite: BC	CS18E0	)9				Ty	3	0/0	0/0	3
L : Lecture T : Tu	torial	S.Lr:	Superv	ised Le	earning	P:Pr	oject F	R : Res	earch (	C: Cı	redits		
T / L/ ETL : Theo	ry/Lab/	Embed	lded Th	eory a	nd Lab		c .						
<b>OBJECTIVES :</b>													
To Learn	the bas	ics of <b>(</b>	Conten	t Mana	igemen	t Syste	m						
To Learn	the Too	ols and	technic	ques	-	-							
To Learn				-	gate to a	a web p	age						
To Learn				-	-	-	-						
COURSE OUTC				<b>.</b>									
CO1			ng CMS		nology	, incluc	ling ope	en sou	rce, PH	IP, e	tc.,		
CO2			of desi										
CO3			enting A										
Mapping of Cour	rse Out	Dutcomes with Program Outcomes (POs)											
COs/POs	<b>PO1</b>	PO	PO	PO	PO	PO	PO	PO8	PC	)9	<b>PO1</b>	<b>PO1</b>	<b>PO1</b>
		2	3	4	5	6	7				0	1	2
CO1	H	Μ	H	L	H	Μ	Μ	H	H	I	Н	Н	Μ
CO2	H	Μ	Μ	Μ	H	Н	Μ	Μ	H	I	H	Н	Μ
CO3	H	H	Н	Μ	L	H	Μ	Μ	H		Μ	Н	Μ
COs / PSOs	PS	01	PS	02	PS	03	PS	<b>504</b>		<b>PS</b> (	)5	PS	06
CO1		I		Л		А		H		H			I
CO2		I	I	H		М		Μ		Η		Ν	1
CO3	_	I		Л		Λ		М		Η	[	Ν	1
H/M/L indicates	Streng	th of C	orrela	tion 1	H- Hig	<b>h, M-</b>	Mediu		JOW				n
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	<b>Dpen Electives</b>	Practical / Project	Internships / Technical Skill	Soft Skills				
	Ba	Ē	ΗŇ		<b>~</b>	0		I	S				



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E36	WEB CONTENT MANAGEMENT	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

The student should be able:

- To Learn the basics of Content Management System
- To Learn the Tools and techniques
- To Learn the use of web browser, navigate to a web page
- To Learn the CMS tools for backup and customization

#### UNIT I Introduction to Content Management

CMS – Types of CMS –Create Content –System Versus implementation – Platform versus product – Open source versus commercial – management versus delivery – Content model manageability

#### UNIT II Editorial Tools and Workflow

Shape of Content – Aggregation Models: Implicit and Explicit – URL Addressability of Aggregations – Content Lifecycle – workflow and approvals – Content File Management - Permissions

#### UNIT III Output and Publication Management

Templating - Publishing Content – Multiple Language handling – Language Rules – Personalization, Analytics and Marketing Automation – Form Building – URL Management – Reporting Tools and Dashboards

#### UNIT IV Implementation

APIs and Extensibility: Code API-Event Models-Customizing Rich Text Editors – CMS implementation – Types of implementation – Implementation process

#### UNIT V Working With External Integrators

Engagement models – Sales and scoping – costs –Written agreements – Production – Training and support Total Hours: 45

#### **TEXT BOOK:**

1. Deane Barker, 2016, Web content Management systems, Features and Best Practices, O'Reilly Publications

#### **9 Hrs** ct – O¹

9 Hrs

9 Hrs

# 9 Hrs



Subject Codes				2	010 K	egulatio		/ τ		<b>T</b> /	D/D	C
Subject Code:	<b>C</b> 1	h :	Nama				Ty Lb			T/ S.Lr	P/R	С
BCS18E37	Su	•			ARNII	NC	E1		1	<b>5.</b> Lr		
20010101		IVI	ACIIII			NU						
	Pre	requi	site: B	CS18F	06		Ty	3		0/0	0/0	3
L : Lecture T : Tut						P · Pro			rch C· (		0/0	5
Ty/Lb/ETL : Theo							jeet R	. Resea		cicans		
<b>OBJECTIVES :</b>	J											
	rn machi	ne lea	arning t	techniq	ues							
	juire kno					nd non	oaramet	ric meth	nods			
	derstand	-	-		-	-	•					
	ign and a			-				-				
COURSE OUTC												
CO1	T	Under	rstand t	he con	cept of	Machi	ne Lear	ning				
CO2	I	Recos	gnizeth	eimpor	tancea	ndrelev	anceofN	/lachine	Learni	ng Mode	ls	
CO3							rning A			0		
Mapping of Cour												
		Р		PO	РО	РО				DO1		PO
COs/POs	PO1	0	PO 3	4	FU 5	<b>FU</b> 6	<b>PO7</b>	<b>PO8</b>	PO9	PO1 0	PO11	12
		2	_		_					-		
CO1	H	H	M	H	H	M	M	M	H	M	H	H
CO2	M	H	M	H	H	M	M	H	M	H	M	H
CO3	H	H	M	H	H	M	H	M	H	M	H	M
COs / PSOs	PSC PSC			<u>02</u>		03	PSO4	•	PSC M		PSC	
CO1 CO2	H M			/ <u>1</u>		M H	H M		<u>M</u> H		M H	
C02 C03				H H		H H	M		<u>п</u> М		M	
H/M/L indicates S							Aedium	L-Lo			171	
	<u>, , , , , , , , , , , , , , , , , , , </u>		ontenat									
								Technical Skill				
		SS	cial					cal				
		Sciences	Soc		s		t	hni				
Category	S	cie	ри		tive	S	jec	lec				
feg	JCe	50 00	s ar	ore	lect	ive	Pro					
Cai	ciel	nin	s	1 C	JΕ	lect	[/]	uips	lls			
	c S	nee	ani	ran	ran	ΠE	tica	nsh	Ski			
	Basic Sciences	Engineering	Humanities and Social Sciences	Program Core	rog	Open Electives	Practical / Project	Internships /	Soft Skills			
-	В	ш	ЧŇ	<u> </u>	Program Electives	0	Ā	Ir	Ň			
		1		1		1	1	1	I I			



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E37	MACHINE LEARNING	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To learn machine learning techniques
- To acquire knowledge about clustering and nonparametric methods
- To understand multilayer perceptrons and dimensionality reduction
- To design and analyze machine learning experiments.

#### UNIT I Introduction to Machine Learning

Machine Learning – Machine learning applications – learning association – supervised learning – learning a class from examples – learning multiple classes – regression – model selection and generation – Bayestan decision theory – losses and risk – discriminant functions – association rules.

### UNIT II Parametric and Multivariate Methods

Parametric methods – maximum likelihood estimation – Baye's estimator – parametric classification – regression – tuning model – multivariate methods – multivariate data – multivariate normal distribution – multivariate regression – dimensionality reduction – subset selection – factor analysis – multidimensional scaling – Isomap

#### UNIT III Clustering and Nonparametric Methods

Clustering - Mixtures densities - k mean clustering - special and hierarchal clustering - Nonparametric density estimation - generalization to multivariate data - nonparametric classification - outlier data - decision trees - univariate trees - pruning - rule extraction from trees - multivariate trees.

#### UNIT IV Linear Discrimination and Multilayer Perceptrons

Linear discrimination – generalizing the linear model – pair wise separation – logistic discrimination – discrimination by regression – multilayer preceptrons – MLP – back propagation algorithms – training procedures – tuning – dimensionality reduction – deep learning – local models – competitive learning – radial basis – normalized basis – learning vector quantization - mixture of experts.

#### UNIT V Kernel Machines and Graphical Models

belief propagation – Hidden morkov models – Bayesten estimation – combining multiple learners – reinforcement learning.

#### **TEXT BOOKS:**

- 1. Ethem Alpaydin, 2014 "Introduction to Machine Learning" 3^{r.d} Edition PHI
- 2. Snila Gollapudi, 2016 "Practical Machine Learning" PACKT.

#### **REFERENCE BOOKS:**

- 1. Tom M Mitchell, 2013 "Machine Learning" McGraw-Hill.
- 2. David Barber, 2015 "Bayesian Reasoning and Machine Learning" Cambridge University Press.

#### **9Hrs** – learr

9Hrs

9Hrs

# 9Hrs

9Hrs

### Total Hours: 45



					20	18 Reg	ulation	<u>n</u>					
Subject Code	e: Su	ıbject N	ame :					Ty/	L	Τ/	<b>P/</b> I	R C	
BCS18E38								Lb/		S.Lr			
			M - C	OMMI	ERCE			ETL					
			te: BIT18					Ту	3	0/0	0/0	0 3	
L : Lecture T			-			-	oject 1	R : Rese	arch C: C	Credits			
Ty/Lb/ETL:		/Lab/En	nbedded	Theory	and La	b							
OBJECT													
			- comm		•	and val	ue chai	ins					
			1-comme										
			commerc			-							
									/I- comm	erce in va	rious c	domains.	
-	- ·		nmerce i		ess-to-b	ousiness	applic	ation.					
COURSE OU	JTCO	MES (C	COs): (3)	- 5)									_
C01	T	Intions	forms of	wirolog	e comm	unicati	on and	the stan	darde or	larchitact	ura of	wireless LAN	N
CO1 CO2										cedures; a		WIICIESS LAI	N
		*							*		iu		
CO3			etworkin					ding WA	AP protoc	cols			
Mapping of (									1		T	1	
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO	PO12	
											11		
CO1	Н	H	Н	Н	Н	H	Н	Μ	Н	Μ	Н	Μ	
CO2	H	H	H	H	H	H	H	Μ	H	H	Μ	M	
CO3	Н	Н	Н	Н	Н	Μ	Μ	М	Μ	Μ	Μ	Μ	
COs /	PS	501	PSC	02	PS	03	P	SO4	Р	SO5		PSO6	
PSOs													
CO1	Н		Н		Η		Н		Н		Η		
CO2	Η		Н		Η		Н		Η		Н		
CO3	Η		Н		Η		H		Η		Η		
H/M/L indica	ates St	rength o	of Corre	lation	H- Hig	gh, M-	Mediu	m, L-Lo	OW				
								-					
			al					Internships / Technical Skill					
		ces	Social					hn					
		enc			/es		ct	Tec					
ory	es	Sci	pu	e	ctiv	es	oje	ps / T Skill					
egu	Suc	ng	es a	Cor	Elec	, tiv	Pr	S					
Category	cié	eri	uiti6 2S	u (	mI	ilec	al /	'nsł	slli				
-	ic S	ine	nan nce	grai	grai	пE	tic	Iter	Sk				
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	In	Soft Skills				
ŀ	Щ	Щ	ЦN				Д		S				
					-								_



**2018 Regulation** 

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E38	M- COMMERCE	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- To understand the E commerce strategies and value chains •
- To understand the M-commerce services
- To understand M commerce infrastructure and applications.
- To know the availability of latest technology and applications of M- commerce in various domains.
- To apply mobile commerce in business-to-business application.

#### **UNIT I: Electronic Commerce**

Traditional commerce and E-commerce - Internet and WWW - Role of WWW - Value Chains -Strategic Business And Industry Value Chains - Role of E-commerce. Packet Switched Networks -TCP/IP Protocol Script - Internet Utility Programmes - SGML, HTML and XML - Web Client And Servers - Web Client/Server Architecture.

#### **UNIT II: Mobile Commerce**

Introduction - Infrastructure of M-Commerce - Types Of Mobile Commerce Services - Technologies Of Wireless Business - Benefits And Limitations, Support, Mobile Marketing & Advertisement, Non-Internet Applications In M-Commerce - Wireless/Wired Commerce Comparisons. 9Hrs

#### **UNIT III: Mobile Technology**

A Framework For The Study Of Mobile Commerce - NTT Docomo's I-Mode - Wireless Devices For Mobile Commerce - Towards A Classification Framework For Mobile Location Based Services -Wireless Personal And Local Area Networks .

#### **UNIT IV: Theory and Applications**

The Ecology Of Mobile Commerce - The Wireless Application Protocol - Mobile Business Services -Mobile Portal - Factors Influencing The Adoption of Mobile Gaming Services - Mobile Data Technologies And Small Business Adoption And Diffusion - E-commerce in The Automotive Industry - Location- Based Services.

#### UNIT V: Business- To- Business Mobile E- Commerce

Enterprise Enablement - Email and Messaging - Field Force Automation (Insurance, Real Estate, Maintenance, Healthcare) - Field Sales Support (Content Access, Inventory) - Asset Tracking and Maintenance/Management - Remote IT Support - Customer Retention (B2C Services, Financial, Special Deals) – Warehouse Automation – Security.

#### **Total Hours: 45**

#### **Text Books:**

- 1. E.BrianMennecke, J.TroyStrader, (2005) Mobile Commerce: Technology, Theory and Applications, Idea Group
- 2. Ravi Kalakota, B.AndrewWhinston, (2007) Frontiers of Electronic Commerce, Pearson Education **Reference Books:**
- 1. P. J. Louis (2009) M-Commerce Crash Course, McGraw-Hill Companies
- 2. Paul May (2006) Mobile Commerce: Opportunities, Applications, and Technologies Of Wireless Business, Cambridge University Press.

### 9 Hrs

# 9 Hrs

9Hrs



Subject	Code:	Subi	ect Name	:	20	18 Keg	ulation		Ty/	L	Τ/	<b>P</b> /	С
~		~			E SYST	EMS			Lb/		S.Lr	R	C
BCS18	E <b>39</b>								ETL		~		
		Prere	quisite:B	CS1800	)6				Ту	3	0/0	0/0	3
L : Lect	ure T : T	Futorial	S.Lr : \$	Supervis	sed Lear	ning P	: Projec	t R : R	esearch	C: C	Credits		
			b/Embed	ded The	ory and	Lab							
OBJEC													
			duling an		•	•							
		<b>^</b>	ation and			timing	constrai	nts and	properti	ies			
	÷		s for real-	•									
				ementat	ion of	new te	chnique	es to a	dvance	the	state-of	-the-art	real-time
	systems			. (2 5	<u>`````````````````````````````````````</u>								
			ES (COs) derstand			nto in t	hoory	faampi	itor soio	200			
		•				•	•	•					
			derstand										1 .
		<i>•</i>	ply know	0	f advand	ced com	puter so	cience t	o formul	late t	the analy	ze pro	olems in
			solve the utcomes		ogrom	Outoor	nos ( <b>D</b> ()	c)					
COs/P	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PC	<b>)10</b>	PO1	PO12
Os	101	102	105	104	105	100	10/	100	109	IC	/10	1	1012
CO1	Н	Μ	Μ	Μ	Н	Μ	L	Μ	Μ	Μ		H	Н
CO2	L	Μ	Μ	Н	Н	Μ	Μ	Н	H	Η		L	Н
CO3	Н	Μ	L	Η	Μ	L	Н	Μ	L	L		Μ	Μ
COs /	PS	01	PSC	02	PS	03	PS	<b>504</b>		PSO	5	]	PSO6
PSOs										1			
CO1		H	Ν			Л		М	H		Μ	Μ	M
CO2		Λ	M			Л		L	Μ		H	Μ	M
<u>CO3</u>		H						M	M		H	Μ	Μ
H/M/L	indicat	es Stren	gth of C	orrelati	on H-	Hign,	IVI- IVIE		L-LOW	1			
		Sciences	and Social	re	ectives	ives	Project	Internships / Technical Skill					
Category	Basic Sciences	Engineering Sci	Humanities and Sciences	Program Core	Program Electiv	Open Electives	Practical / Proje	Internships	Soft Skills				



**2018 Regulation** 

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E39	REAL TIME SYSTEMS	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

Student Learning Objectives/Outcomes:

- Real-time scheduling and schedulability analysis
- Formal specification and verification of timing constraints and properties
- Design methods for real-time systems
- Development and implementation of new techniques to advance the state-of-the-art real-time • systems research

#### UNIT I Introduction

Architecture of real time systems/embedded systems-operating systems issues-performance measuresestimating program run times.

#### **UNIT II Task Assignment and Scheduling**

Uniprocessor scheduling-IRIS tasks-task assignment algorithms- mode changes -fault tolerance scheduling.

#### UNIT III **Programming Languages and Tools**

Desired characteristics based on ADA-data typing-control structures-packages-exception handlingoverloading-multitasking-timing specification-task scheduling-just in time compilation-run time support.

#### UNIT IV **Real Time Databases**

Basic definitions-main memory databases -transaction processing-concurrency control-disk scheduling algorithms-serialization and consistency-real time communication

#### Fault Tolerance, Reliability and Synchornization **UNIT V**

Fault types-fault detection and containment-redundancy-data diversity-reversal checks-obtaining parameter values-reliability models for hardware redundancy-software error models-clocks-fault tolerance synchronization-synchronization and software.

#### **TEXT BOOK:**

1. C.M.Krishna, Kang.G.Shin, 2010, Realtime Systems, McGraw Hill.

#### **REFERENCE BOOKS:**

- 1. Rajib Mall, 2007 "Real-time systems: theory and practice", Pearson Education.
- 2. Phillip A.Laplante 2011 Real Time System Design and Analysis, 4 th edition, Wiley.
- 3. Alan burns and andy wellings, 2009 "Real time systems and prog. Languages", 4 thedition, pearson.

#### B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

### 9 Hrs

9 Hrs

# 9 Hrs

# 9 Hrs

#### 9 Hrs

### **Total Hours: 45**



Subject Cod	le: St	ıbject N	ame :			o Kegui			Ty/	L	<b>T</b> /	P/R	C
DCC10E40			יתייאור	DIMPE		יזיזי			Lb/		S.Lr		
BCS18E40			DISTRI				NG		ETL				
			te: BIT1						Ту	3	0/0	0/0	3
L : Lecture '							Project	$\mathbf{t} \mathbf{R} : \mathbf{R}$	esearch	C: C	redits		
Ty/Lb/ETL		y/Lab/E	mbedde	d Theo	ry and l	Lab							
OBJECTIV													
			vill be ab				•		•	/stem	s		
•	To und	erstand	commur	nication	concep	pts of d	istribute	ed syste	ems				
•	To app	ly the m	nemory n	nanage	ment de	esign of	distrib	uted sy	stems t	o desi	gn a ne	ew mem	ory
COURSE (	<b>)UTC(</b>	OMES (	$\overline{COs}$ : (	(3-5)									
CO1	J	Jndersta	and the d	lesign o	f distril	outed co	omputir	ng syste	ems				
CO2				-			-			ems			
CO3		Understand the communication concepts of distributed systems Design a new memory by applying the memory management design of distributed										ed	
		systems											
CO4		Understand the distributed file system security											
		urse Outcomes with Program Outcomes (POs)											
COs/POs	PO1	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	PO8	PO9	P	010	PO11	PO12
CO1	Н	Μ	Н	Μ	Μ	Н	Н	Μ	Н		Μ	Η	Н
CO2	Н	Н	Н	Н	Μ	Н	Н	Н	Н		Η	Η	Н
CO3	Н	Μ	Н	Μ	Μ	Н	Μ	Μ	Н		Μ	Η	Μ
CO4	Н	Μ	Н	Μ	Μ	Н	Н	Н	H		Н	Н	Н
Mapping of	f Cours	e Outco	omes wi	th Prog	gram S	pecific	Outco	mes (P	SOs)				
COs /		501	PSC			03		<b>50</b> 4		PSO5	5	PS	506
PSOs													
CO1		H	]	Н	N	Л	]	H		Μ		]	М
CO2	-	Н	Н			I		H		Н			М
CO3		Н	Н	I	N	Л	I	М		Μ	ĺ		М
CO4	]	H	H	I	I	Ι	I	М		Η			H
H/M/L indi	icates S	trength	of Cori	relatior	n H-1	High, N	I- Med	lium, L	-Low				
			s d		ive		ect	kill					
Y	ces	<b>F</b> 0	an nce	ore	ecti	ves	roj	uips 1 Sl					
Category	ien	ing	ies cie	Cc	Еľ	šcti	/ P	Internships / Technical Skill	ls				
ate	Sci	eer	S	m	am	Ele	cal	ten	kil				
Ŭ	sic	enc	ma :ial	gr	gr	en	cti	In Tec	it S				
	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	▲ Program Electives	Open Electives	Practical / Project		Soft Skills				
					~								
	1								1				



2018 Regulation

SUBJECT CODE	SUBJECT NAME	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BCS18E40	<b>DISTRIBUTED COMPUTING</b>	Ту	3	0/0	0/0	3

#### **OBJECTIVES:**

- The students will be able to understand the design of distributed systems
- To understand communication concepts of distributed systems
- To apply the memory management design of distributed systems to design a new memory

#### UNIT I Fundamentals

Introduction to distributed computing system, Evolution, Different models, Gaining popularity, Definition, Issues in design, DCE, Message passing-Introduction, Desirable features of a good message passing system, Issues in IPC, Synchronization, Buffering, Multidatagram, Process addressing, Failure handling, Group communication.

#### UNIT II Remote Procedure Call

Introduction, RPC model, transparency of RPC, Implementing RPC mechanism, Stub generation, RPC messages, Marshalling arguments and results, Sever management, parameter-passing semantics, Call semantics, Communication protocols for RPCs, Complicated RPC, Client-server binding, exceptional handling, security, Lightweight RPC.

### UNIT III Distributed Shared Memory and Synchronization

Introduction, General architecture of DSM systems, Design and implementation issues of DSM,Granularity, Structure of shared memory space, Consistency model, Replacement strategy, Thrashing, Different approaches to DSM, Advantages of DSM, Clock synchronization, Event ordering, Mutual exclusion, Deadlock, Election algorithm.

#### UNIT IV Resource and Process Management

Introduction, Desirable features of a good global scheduling algorithm, Task assignment approach, Load balancing approach, Load sharing approach, Process migration, Threads.

#### UNIT V DFS/DCE Security

Desirable features of good DFS, File models, File accessing, models, File sharing semantics, File cachingschemes, File replication, Fault tolerance, Atomic Transaction, Design principles, Authentication, Access control,Digital signatures, DCE security service.

#### **Total Hours: 45**

9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs

#### **TEXT BOOK:**

1. Pradeep K. Sinha (2012 Reprint), Distributed Operating System Concepts and Design PHI

#### **REFERENCE BOOKS:**

- 1. Andrew S. Tenenbaum (2012), Modern Operating System (3rd ed.) PHI
- 2. Ajay D. Kshemkalyani , Mukesh Singhal (2008), Distributed computing : principles, algorithms and systems Cambridge University Press
- 3. Andrew S. Tenenbaum & Maatren Vansteen (2012) Distributed systems: Principles & Paradigms (2nd ed.), PHI
- 4. Hagit Attiya And Jennifer Welch (2004) Distributed computing fundamentals, simulations and Advanced Topics (Digitized in 2007) (2nd ed.), Wiley
- 5. Jean Dollimore, Tim Kindberg, And George Coulouris (2005) Distributed Systems: Concepts and Design (4th ed.) Pearson Education



### **Open Electives**

Subject Code BIT180E1		ibject N <b>EB D</b> I							Ty/ Lb/	L	T/ S.Lr	P/R	С
DITIOULI	••	гррг	101014						LD/ ETL		S.Lr		
	Pr	erequisi	te: Nil						Ty	3	0/0	0/0	3
L : Lecture T				pervised	l Learn	ing P:	Project	t R : Re					-
Ty/Lb/ETL :			-			•	5						
OBJECTIV	ES :												
• 7	The stu	dents v	vill lear	n the l	Networ	k and	Interne	et work	s.				
• 7	To lear	n the H	TML p	rogran	n struc	ture, e	lement	s and T	lags.				
		e know	-	-					-				
		n how t	-	-									
		n and d	-	-				-		noue	ares		
COURSE O			-		unite w		5 using	seript	1115 10	ingut	4503.		
CO1		Basics of	, ,		Interne	t works	5.						
CO2		Able to e											
CO3		Ability to				ive onli	ine app	lication	s.				
CO4										desig	n a qua	lity web s	site.
Mapping of			-							<u> </u>			
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	PO8	PO	9 ]	PO10	PO11	PO12
CO1	H	L	Μ	L	L	Η	L	L	Η	]	М	L	L
CO2	Η	Μ	L	Н	L	L	L	L	L	]	L	L	Н
CO3	Μ	Μ	Н	L	Н	Μ	Н	L	Μ	]	М	L	L
CO4	Μ	Μ	Н	L	L	Μ	L	L	Μ	]	М	L	L
COs /	PS	501	PS	02	PS	03	PS	<b>504</b>		PS	05	PS	506
PSOs													
CO1	L		Н		L		L		Μ			L	
CO2	L		Н		L		L		Μ			L	
CO3	Н		Μ		L		L		Μ			Μ	
CO4	H		Μ		L		L		Μ			Μ	
H/M/L indic	ates St	rength	of Cori	relatior	<u>h H-l</u>	High, N	<u> 1- Med</u>	lium, L	-Low				
					S		it						
~	S		and nces		ctives	S	jec	ps / Skill					
Category	nce	ള	s al enc	Ore	llec	tive	Prc						
iteg	cie	erin	itie Sci	n C	пЕ	lec	սl /	rns] iicé		IIIS			
$C_{a}$	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Ele	Open Electives	Practical / Project	Internshi Technical	5	Soft Skills			
	asi	ngi cie	lum	rog	rog	Ibei	rac	Te I	4	off			
	В	ыŇ	H S	Ъ	Ъ		Р		0	2			<u> </u>
						~							



Course Code	Course Title	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT18OE1	WEB DESIGN	Ту	3	0/0	0/0	3

### **OBJECTIVES:**

- The students will learn the Network and Internet works.
- To learn the HTML program structure, elements and Tags.
- To have knowledge to design basic website for their own.
- To learn how to design an effective website using CSS.
- To learn and develop a dynamic web sites using scripting languages.

### **UNIT I: Introduction to Network**

Introduction to computer networks and uses - Network: devices, topology and types – Communication media. Introduction to OSI layers, Port and Protocols, Network applications. Client / Serverarchitecture. Internet server provider, DNS and Hosting.

### **UNIT II: Web Design Principles**

Brief History of Internet - What is World Wide Web - Why create a web site - Web Standards - Audience requirement. Basic principles involved in developing a web site - Planning process - Five Golden rules of web designing - Designing navigation bar - Page design - Home Page Layout - Design Concept.

### UNIT III: HTML

Introduction to HTML- HTML version- Basic structure of an HTML document – Creating HTML document – HTML Elements - HTML Tags - Working with Text - Working with Lists, Tables and Frames - Working with Hyperlinks, Images and Multimedia - Working with Forms and controls .

### **UNIT IV: Cascading Style Sheet**

Concept of CSS - Creating Style Sheet - CSS Properties - CSSStyling (Background, Text Format, Controlling Fonts) - Working with block elements and objects - Working with Lists and Tables - CSS Id and Class - Box Model(Introduction, Border properties, Padding Properties, Margin properties) - CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector) - CSS Color - Creating page Layout and Site Designs.

### **UNIT IV: Scripting Languages**

JavaScript introduction – control structures – functions – arrays – objects – simple web applications. Web hosting and maintenance.

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values

### 9 Hrs

9 Hrs

#### 9 Hrs

### 9 Hrs



### **Total Hours: 45**

### **Text Books:**

- 1. Computer Networks by A Tanenbaum 5th edition, Pearson Education
- 2. Mastering HTML, CSS & JavaScript Web Publishing by Laura Lemay, Rafe Coburn, Jennifer Kyrnin , Pearson Education.
- 3. HTML & CSS: The Complete Reference, Fifth Edition by Thomas A. Powell, McGraw-Hill publication.

Subject Code: BIT18OE2	Subject Name : DIGITAL MARKETING	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
	Prerequisite: Nil	Ту	3	0/0	0/0	3

B.Tech – Information Technology (Full Time) – 2018 Regulation After CDC of Universal Human Values



#### **2018 Regulation**

 $\label{eq:Linear} \begin{array}{ll} L: Lecture \ T: Tutorial & S.Lr: Supervised \ Learning \ P: Project \ R: Research \ C: Credits \\ Ty/Lb/ETL: Theory/Lab/Embedded \ Theory \ and \ Lab \end{array}$ 

- This course helps the students to understand the fundamental principles of Digital marketing, the past, present and future potential of Digital marketing.
- At the end of the course students will be able to identify the role of e-marketing in the present context and develop an e-marketing plan with appropriate e-marketing strategies.

COURSE O												
CO1		Understa					-	Marketi	ng			
CO2	]	Develop	Strateg	ic Plan	ning fo	r the M	arket					
CO3	]	Evaluate	the Eth	ical and	l Legal	Values	5					
CO4	]	Predict t	he Mark	teting T	rends							
Mapping of	Cours	e Outco	mes wit	h Prog	ram O	utcom	es (POs	5)				
COs/POs	P01	PO2	PO3	<b>PO4</b>	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	PO10	PO11	PO12
CO1	Η	L	Μ	L	L	L	L	H	L	М	L	L
CO2	Η	М	L	L	L	L	Н	L	L	L	L	Н
CO3	Μ	Μ	Н	L	Н	Μ	L	L	Μ	М	L	L
CO4	Μ	Μ	Н	L	L	Μ	L	L	Μ	М	Н	L
COs / PSOs	P	501	PS	02	PS	03	PSO4		Р	SO5	PS	06
CO1	L		Н		L		L		Μ		L	
CO2	L		Н		L		L		Μ		L	
CO3	Η		Μ		L		L		Μ		Μ	
CO4	Η		Μ		L		L		Μ		Μ	
H/M/L indic	ates S	trength	of Corr	elation	H- H	High, M	I- Med	ium, L-	Low			
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills			
						~						1
	I		1			l	1	I	1	1	1	ــــــــــــــــــــــــــــــــــــــ



Course Code	Course Title	Ty/	L	<b>T</b> /	P/R	С
		Lb/		S.Lr		
		ETL				
BIT18OE2	<b>DIGITAL MARKETING</b>	Ту	3	0/0	0/0	3

## **OBJECTIVES:**

- This course helps the students to understand the fundamental principles of Digital marketing, the past, present and future potential of Digital marketing.
- At the end of the course students will be able to identify the role of e-marketing in the present context and develop an e-marketing plan with appropriate e-marketing strategies.

# **UNIT I: INTRODUCTION**

Digital-Marketing Past, Present & Future – Digital-Marketing Landscape, Digital-marketing's Past - Web 1.0, Digital Marketing Present - Web 2.0, Future -Web 3.0, Strategic Digital-Marketing, and Digital -Business Models – Online Revenue Models, Value Models, and Strategic Digital-Business Models.

# **UNIT II: DIGITAL MARKETING PLAN**

Process, Creating a Digital-Marketing Plan, Seven Steps –Situation Analysis, Strategic Planning, Objectives, Digital-Marketing Strategies – Product, Price, Distribution, Communication, Relationship Management; Implementation plan, Budget, Evaluation.

# UNIT III: DIGITAL -MARKETING ENVIRON MENT

Overview of Digital-Marketing Environment, Global Digital -Markets, Wireless Internet Access, Digital divide, Building inclusive Digital markets, social networking, Ethical and Legal Issues – Overview, Digital Property, Emerging issues.

# UNIT IV: DIGITAL-MARKETING MANAGEMENT

Online offer – Creating customer value online, Product Benefits, Digital Marketing enhanced product development, Payment options, Pricing Strategies; Internet as distribution, Digital Marketing Communication – Owned Media, Paid media, Earned Media.

# **UNIT V: EMERGING TRENDS**

Emerging trends in Digital-marketing, Content Marketing, Social Media Marketing, Email Marketing, Affiliate Marketing, Video Marketing, Mobile Marketing, Interactive advertising, International Online Marketing, Search Engine Marketing, Online Partnership, Viral Marketing, E-CRM, E-Business, E-Tailing.

# **TEXT BOOK:**

Strauss Judy, Frost Raymond (2013), E-Marketing, 7/e; New Delhi: Prentice Hall.
 2.

# **REFERENCE BOOKS:**

- 1. Chaffey Dave and Smith PR (2013), Emarketing Excellence: Planning and Optimizing your Digital Marketing; 4/e; Routledge.
- 2. Ryan Damian, (2014), Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation, 3/e; Kogan Page Limited.

# 9 Hrs

9 Hrs

9 Hrs

9 Hrs

9 Hrs

# Total Hours: 45



2018 Regulation

~ ~ .	~				2018	8 Regu	auon						
Subject Code		ubject N							Ty/	L	Τ/	P/R	С
BIT18OE3		NFORN			CURI	ΤY			Lb/		S.Lr		
		IANAG		NT					ETL				
		rerequisi							Ту	3	0/0	0/0	3
L : Lecture T							Projec	t R : R	esearc	h C:	Credits		
Ty/Lb/ETL :		y/Lab/Ei	mbedde	d Theo	ry and	Lab							
OBJECTIV	ES :												
> Te	o prov	vide an	under	standi	ng of	the pri	inciple	s of in	nform	ation	securi	ty mana	agement
		nly used			-	-	-					-	-
🕨 In	trodu	ce the c	ommor	nlv use	d fram	ework	s and r	nethod	s				
				•						• .			
E E	xplore	critical	lly the s	suitabi	lity and	d appro	opriate	ness of	secur	nty r	leeds.		
COURCE O			$\mathbf{CO}$										
COURSE O						d _1	if: a a ti a	on of C					
CO1		To Unde											
CO2 CO3		Concept				Ŭ					dumas		
		Develop the security plan methodology and follow policy proced Using ISO to enhance security									edures		
CO4 Manning of		se Outcomes with Program Outcomes (POs)											
					1				DO			<b>DO11</b>	DO12
COs/POs	PO1		PO3	PO4	PO5	PO6	PO7	PO8	PO		PO10	PO11	PO12
CO1 CO2	H H	L M	M L	L H	L L	L L	H L				M L	L L	H
CO2 CO3					L L				L M			L	L
CO3 CO4	M M	M M	H H	L L	L H	M M		H L	M		M M		
CO4 COs/		SO1	п PS			<b>O</b> 3		SO4	IVI	PSC			506
PSOs	<b>P</b> i	501	rs	02	rs	05	P,	504		P30	J5	<b>P</b>	500
CO1	L		Н		L		H		Μ			L	
CO1 CO2			H		L		L		M				
CO2	H H		M		H				M			M	
CO4	H		M		L		L		M			M	
H/M/L indic		trenoth		relatio		High. N		lium. I				171	
			. 0		/es		sct						
<u>у</u>	ses		and	မ	ctiv	/es	oje	ps / Ski					
g01	enc	ng	es a	Co	Ele	ctiv	$P_1$	shij		s			
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	F	Soft Skills			
C	ic l	Engineer Sciences	maı ial	gra	gra	en l	ctic	lnte	5				
	Bas	Eng	Hui Soc	Pro	Pro	эdС	Pra	Ľ	7	Sot			
							_			- 1			
						~							
						1						1	



Course Code	Course Title	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT180E3	INFORMATION SECURITY MANAGEMENT	Ту	3	0/0	0/0	3

# **OBJECTIVES :**

The objective of the course is

- To provide an understanding of the principles of information security management commonly used in business
- Introduce the commonly used frameworks and methods
- Explore critically the suitability and appropriateness of security needs.

UNIT I : INTRODUCTION TO INFORMATION SECURITY AND MANAGEMENT 9 Hrs Information sensitivity classification-governance-computing environment- security of various components – Management Concepts: traditional management skills and security literacy, managerial skills, redefining Mintzberg's Managerial roles, IS Security management activitiesinformation security management life cycles- security management vs functional management UNIT II : INFORMATION SECURITY LIFECYCLE 9 Hrs Introduction-Security planning in SLC-Security analysis-security design- security implementation – design- continual security

UNIT III : SECURITY PLAN AND POLICY

Security plan: Development guidelines-security plan methodologies- Policy: security policy, standards and guidelines- security policy methodologies

UNIT IV: SECURITY RISK MANAGEMENT

Introduction- risk management life cycle- preparation efforts- security culture-factors affecting security risk- ALE risk methodology- operational, functional and strategic risks- ABLE methodology

UNIT V: SECURITY DESIGN AND IMPLENTATION

ISO/IEC 27002- Using ISO/IEC 27002 to enhance security- measurement and implementationgeneral ISMS Framework- ISMS Model and design- integration of ISMS Subsystems-self assessment for compliance- Security solutions: security management, access control, security analysis

## Text Book

1. "Information Security Management: Concepts and Practice "Bell G. Raggard, CRC Press 2010

Reference Books:

- 1. "Information Security Management Principles" David Alexander, Amanda Finch, BCS Learning and Development Ltd, 2013
- 2. "Security Analysis and Portfolio Management" Ronald E Fischer, S.Kevin PHI Learning Pvt Ltd, 2015.

9 Hrs

**Total Hours: 45** 

9 Hrs

9 Hrs



Subject Code	: Su	bject N	ame : Iı	ntrodu	ction to	) Multi	media		Ty/ Lb/		T/ S.Lr	P/R	С
	Dr	erequisi	to: Nil						ETL Tv	, 3	0/0	0/0	3
L : Lecture T				nervise	d Learn	ing P	Projec	∙t R ·		-			5
Ty/Lb/ETL :	Theor	y/Lab/E	mbedde	d Theo	ory and	Lab	. I lojee		resea		. creans		
<b>OBJECTIV</b>					J								
1. To learn a	about ]	Basics	of Com	puter (	Graphi	cs.							
2. To unders							and 3	D Di	mensi	onal	Graphic	s	
3. To unders	stand t	he conv	version	of 2D	to 3D	Picture	es.				1		
COURSE O													
CO1		Jndersta											
CO2								ipping	g on ge	eomet	trical obj	ects	
CO3		Concept			pping C	Operatio	ons						
CO4		nalyze											
Mapping of								1					1
COs/POs	<b>PO1</b>	PO2	PO3	<b>PO4</b>	PO5	<b>PO6</b>	<b>PO7</b>	PO		<b>)</b> 9	PO10	PO11	PO12
CO1	H	L	M	H	H	L	L	L	L		M	L	L
CO2	H	M	L	L	L	L	L	L			L	L	H
CO3	M	M	H	L	L	M	H	H	M		M	L	L
CO4	M		H		L	M	L		Μ		<u>M</u>	H	
COs /	PS	501	PS	02	PS	03	PS	<b>504</b>		P	505	PS	506
PSOs CO1	L		Н		L		L		Μ			L	
CO1 CO2	L L		н Н		H		L		M				
CO2 CO3	H		M		L		H		M			M	
CO3	H		M		L		L		M			M	
H/M/L indic		trength		relatio		High, N		lium.				171	
				- ciulio		 				••			
			_ ~		Electives		sct	_ E					
Ŋ	ces		nities and Sciences	e	ctiv	lectives	/ Project	bs	SK				
egory	enc	ing	es ciel	Core	Ele	ctiv	/P	shi	cal	lls			
Cate	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	am		Ele	cal	Internships /		kill			
U	sic	Engineer Sciences	Human Social	Program	Program	Open El	Practical	Int	ec.	Soft Ski			
	Baí	Eng	Hu Soc	Prc	Prc	Op	Pra		-	Sof			
						<ul> <li>✓</li> </ul>							
						•							



Course Code	Course Title	Ty/ Lb/ ETL	L	T/ S.Lr	P/R	С
BIT180E4	INTRODUCTION TO MULTIMEDIA	Ту	3	0/0	0/0	3

## **Objectives:**

- 1. To learn about Basics of Computer Graphics.
- 2. To understand the difference between normal, 2D and 3D Dimensional Graphics
- 3. To understand the conversion of 2D to 3D Pictures.

# Unit – I Types of Display

Video display device: Cathode ray tube, Raster scan displays, Random scan displays. Raster scan systems, Random scan systems, Input devices, Graphics software.

# Unit – II Basic Algorithm of Drawings

Output Primitives: Points & Lines, Line drawing Algorithms, Loading the frame buffer, Circle & Ellipse generating Algorithms, Pixel addressing & Object geometry, Fill area primitives, Character generation

# **Unit – III Types of Transformation**

2-D Geometric Transformations : Basic Transformations , Matrix representation & Homogeneous Coordinates, Composite Transformations, Other Transformations, Transformations between Coordinate Systems, Raster methods for Transformations

# Unit – IV Clippings Operation

2- Dimensional Viewing: Viewing pipeline, Viewing Coordinate reference frame, Window-toview port coordinate transformation, Line clipping, Polygon Clipping, Curve Clipping.

# Unit – V 3D Effects

3 -D Concepts: 3 -D display methods. 3-D Geometric & Modeling Transformations: Translation, Rotation, Scaling, Other Transformations, Composite Transformations, Modeling & Coordinate. **Total Number of Hours: 45** 

## **Text Book:**

1. D.Hearn & M.P.Becker, "Computer graphics"; 2 nd Ed., Prentice Hall India-1995

## **References:**

1. Foley Vandam & Hughes, "Computer Graphics"; Addision Wesly.

2. Angel Edward., "Interactive Computer Graphics – A Top-down Approach with OpenGL", Addison-Wesley 1996.

3. Newmann W and Sproull R.F., Principles of Interactive Computer Graphics, McGraw-Hill, 1980

# 9 Hrs

9 Hrs

# 9 Hrs

9 Hrs

#### 9 Hrs



### DEPARTMENT OF INFORMATION TECHNOLOGY 2018 Regulation <u>Open Lab</u>

Subject Cod	e: Su	bject N	ame :						T / L/	L	Τ/	<b>P</b> /	С
BCS18OL1		V	ISUAL	PROG	RAMM	IING L	AB		ETL		S.Lr	R	
	Pre	erequisi	te: C,C+	-+.					Lb	0	0/0	0/0	1
L : Lecture T	: Tutor	rial SI	Lr : Super	rvised I	Learning	g P:Pr	oject F	R : Rese	arch C: C	Credits			
T/L/ETL : Th	neory/L	ab/Emb	edded Tl	neory a	nd Lab								
OBJECTIV	E :												
	0		to review					0					
			so unders			<b>^</b>		<u> </u>	ogrammi	ing.			
			nowledge		window	/s progr	ammin	g.					
COURSE O					- 1 D	•							
CO1			concept					.1		6	•.•		
CO2			e to unde		•					•	•	ograme	:.
CO3			basic kn	-				ion of v	vindows	program	nming.		
Mapping of	Course			-		tcomes	(POs)		-	-			
COs/POs	<b>PO1</b>	PO2	PO3	<b>PO4</b>	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO1		l PC	)12
CO1	Η	Μ	Μ	L	L	L	L	Μ	L	Μ	L	L	
CO2	Η	Η	L	Η	Μ	L	L	Μ	L	Μ	L	L	
CO3	H	M	Μ	L	L	L	L	Μ	L	Μ	L	L	
COs /	PS	601	PSC	02	PS	03	PS	<b>504</b>	PS	505		PSO6	
PSOs													
CO1	H		Μ		L		Μ		L		L		
CO2	H		L		L		L		L		L		
CO3	Η		Μ		L		Μ		L		L		
H/M/L indic	ates St	rength	of Corre	lation	H- Hi	igh, M-	Mediu	m, L-L	ωW				
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	<ul> <li>Practical / Project</li> </ul>	Internships / Technical Skill	Soft Skills				
							~						



Course Code	Course Title	T / L/ ETL	L	T / S.Lr	P/ R	С
BCS18OL1	VISUAL PROGRAMMING LAB	Lb	0	0/0	0/0	1

#### **OBJECTIVES:**

- The objective is to review the basics of Visual programming.
- Students will also understand the concepts of Visual Basic programming.
- Getting more knowledge about windows programming.

#### 1. VISUAL BASIC

- 1. Adding menus to forms
- 2. Creating dialog boxes with various options
- 3. MDI applications
- 4. Writing code for various keyboard and mouse events
- 5. OLE container control
- 6. Data access through Data control and DAO.
- 7. Active X control
- 8. Active X Document
- 9. Active X DLL 2.
- 2. VISUAL C++
  - 1. Creating applications with App wizard
  - 2. Working with MFC
  - 3. Exception handling
  - 4. Loading Editing and Adding resources Linking resources to applications
  - 5. Drawing bitmaps
  - 6. Threads
  - 7. OLE
  - 8. Graph Applications

LEARNING OUTCOMES: Upon completion of this course, the student will be able to:

a. Design, create, build, and debug Visual Basic applications.

b. Explore Visual Basic's Integrated Development Environment (IDE).



Subject Cod	e: Su	bject N	ame :						T / L/	L	Τ/	<b>P</b> /	С
BCS18OL2			WI	EB DE	SIGN I	AB			ETL		S.Lr	R	
	Pre	erequisi	te: NIL						Lb	0	0/0	3/0	1
L : Lecture T			-			$\mathbf{g} \mathbf{P}: \mathbf{P}$	roject I	R : Rese	earch C: 0	Credits			
T/L/ETL : Th	eory/L	ab/Emb	edded Tl	heory a	nd Lab								
OBJECTIVI	ES :												
		5	ct Web T		0								
			of Web T		ogies								
• 4	Advanc	e Progr	amming.										
COURSE O	UTCO	MES (	COs):(3	3- 5)									
CO1	Under	stand c	oncept of	f web te	echnolo	gies.							
CO2	Will b	e able t	o design	the we	b progra	amming	g.						
Mapping of	Course	Outco	mes witł	n Progr	am Ou	tcomes	s (POs)						
COs/POs	<b>PO1</b>	PO2	PO3	<b>PO4</b>	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	PO1	1 P	012
CO1	Η	Μ	Μ	L	L	L	L	Μ	L	Μ	L	L	
CO2	Η	Н	L	H	Μ	L	L	Μ	L	Μ	L	L	
COs /	PS	01	PSC	02	PS	03	PS	604	PS	605		PSO	,
PSOs													
CO1	Η		Μ		L		Μ		L		L		
CO2	Η		L		L		L		L		L		
H/M/L indic	ates St	rength	of Corre	elation	H-H	igh, M-	Mediu	ım, L-I	JOW	1			
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
							~						



#### 2018 Regulation

Course Code	Course Title	T / L/ ETL	L	T / S.Lr	P/ R	С
BCS18OL2	WEB DESIGN LAB	Lb	0	0/0	0/0	1

- Overview Object Web Technologies
- Basic Concept of Web Technologies
- Advance Programming.
- 1. Practice Internet applications.
- 2. Explore Web browsers, search engines
- 3. Familiarise with web portals, e-commerce sites, blogs etc
- 4. Basic Html Tags
- 5. Hyper Links, Tables & Multimedia
- 6. Frames & iFrames
- 7. Inline, Internal and External Style sheets
- 8. Design a web page to display your full bio-data.
- 9. Simple Validating Form (a) HTML forms, (b) JavaScript
- 10. Registration Form with Multi-Validating
- 11. Design a web page to select the elective subject through online with registration form.



		DEI			2018 R			LCIII	OLUGI				
Subject Code	e: Su	bject N	ame :			8			T / L/	L	Τ/	<b>P</b> /	С
BCS18OL3		P	YTHON	PROG	RAMN	AING I	LAB		ETL		S.Lr	R	
	Pr	erequisi	te: Basic	c knowl	edge or	n compu	iters, C	•	Lb	0	0/0	3/0	1
L : Lecture T	: Tuto	rial Sl	Lr : Supe	rvised l	Learnin	g P:P	roject I	R : Res	earch C: C	Credits			
T/L/ETL : Th	neory/L	.ab/Emt	bedded T	heory a	nd Lab								
OBJECTIV	ES :												
			and debug		•								
	-		Python p	•				l loops.					
			or structu	0.		0	5.						
• F	Read ar	nd write	data fror	n/to file	es in Py	thon.							
COURSE O	UTCO	MES (	C <b>Os</b> ) : ( 3	3- 5)									
CO1			und, write			1.							
CO2			Python p	-					s.				
CO3		•	cities for	÷	•••	•	Ç						
CO4			can Crea										
Mapping of										1			
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	-	PO	12
CO1	H	Μ	L	L	Μ	L	L	L	L	L	L	Μ	
CO2	H	Μ	L	L	Μ	L	L	L	L	L	L	Μ	
CO3	H	Μ	L	L	Μ	L	L	L	L	L	L	Μ	
CO4	Η	Μ	L	L	Μ	L	L	L	L	L	L	Μ	
COs /	PS	501	PSC	02	PS	03	PS	604	PS	05	P	<b>SO6</b>	
PSOs													
CO1	H		M		L		L		L		M		
CO2	H		M		L		L		L		M		
CO3	H		M		L		L		L		M		
CO4	H		M		L		L		L		Μ		
H/M/L indic	ates St	trength	of Corre	elation	H-H	igh, M-	• Mediu		LOW	1	1		
								Skil					
		s	ial					al S					
Cotocom		JCet	Social		s			mic					
Category		cieı			ive	s	ject	ech					
	lces	Š	an an	ore	lect	ive	Pro	Τ /					
	cier	nin	lties	υČ	υEl	lect	1/1	ips	ills				
	c S	nee	nce	ran	ran	υE	tica	hsn	Ski				
	Basic Sciences	Engineering Sciences	Humanities and Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
	<u> </u>	Щ	ы S					Ē	S		+		
							•				_1		



### 2018 Regulation

<b>Course Code</b>	Course Title	Τ/	L	Τ/	<b>P/ R</b>	С
		L/		S.L		
		ET		r		
		L				
BCS18OL3	PYTHON PROGRAMMING LAB	Lb	0	0/0	0/0	1

- To write, test, and debug simple Python programs.
- To implement Python programs with conditionals and loops.
- Use functions for structuring Python programs.
- Read and write data from/to files in Python.
- 1. Write a python program to perform all arithmetic operation.
- 2. Write a python program to change the last character in a word.
- 3. Write a python program to check for palindrome.
- 4. Write a python program to check for prime number.
- 5. Write a python program to find the length of the word and display either the length is odd or even.
- 6. Write a python program to perform Fibonacci series for n numbers.
- 7. Write a python program to display the words using Dictionaries.
- 8. Write a python program to to change the alternative characters of a word.
- 9. Write a python program to find the ASCII value for your name.
- 10. Write a python program to to perform stack operation using array.



**2018 Regulation** 

Subject Cod BCS18OL4	e: Si	ıbject N	Name : COMPUTER NETWORK LAB						T / L/ ETL	L	T / S.Lr	P/ R	C	
	Pr		ite: C++,						Lb	0	0/0	0/0	1	
L : Lecture T		-		-	Learnin	g P:F	Project	R : Res	earch C:	Credits	5		4	
T/L/ETL : Th	heory/I	Lab/Eml	bedded T	heory a	ind Lab									
OBJECTIV				2										
		erstand	the work	ing diff	erence	hetwee	n straig	ht cable	e and cro	ss over	cable.			
<ul> <li>To understand the working difference between straight cable and cross over cable.</li> <li>To use the packet tracer to simulate various networks.</li> </ul>														
		-												
COURSE O				-										
CO1			and conce	•		•								
CO2									us netwo	rks.				
Mapping of									1					
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	PO6	PO7	<b>PO8</b>	PO9	PO10			)12	
CO1	H	M	M	L	L	L	L	M	L	M	L	L		
CO2	H		L	H	M		L	M	L	M		L L PSO6		
COs / PSOs	P	501	PSC	)2	2 PSO3			PSO4		PSO5		1300		
CO1	Н		M		L		Μ		L		т	L		
CO1 CO2	H		L		L		L		L			L		
		trength				ligh, M	M- Medium, L-Low				12			
		<u></u>				- <del>8</del> , -:-		,						
			enc					kill						
			Sci					ıl S						
Category			ial					nica						
		lces	oci		~			schi						
		cier	p p		ive	s	ject	/ Te						
	lces	Š ac	s an	ore	lect	ive	Proj	sd						
	cier	arin,	ities	Ŭ	n El	lect	l / l	Internships / Technical Skill	ills					
	c S	inee	iani	gran	gran	nΕ	tica	iteri	Ski					
	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	In	Soft Skills					
					<u> </u>									
							-							



Course Code	Course Title	Τ/	L	Τ/	P/ R	С
		L/		S.L		
		ET		r		
		L				
BCS18OL4	COMPUTER NETWORK LAB	Lb	0	0/0	0/0	1

#### **OBJECTIVES :**

- To understand the working difference between straight cable and cross over cable.
- To use the packet tracer to simulate various networks.
- 1. Study of different types of Network cables and Practically

implement the cross-wired cable

2. Study of Network Devices in Detail.

2a. Study of Network Devices in layer1(HUB, REPEATER)

2b.Study of Network Devices in layer2(Swith)

2c.Study of Network Devices in layer3( Router)

- 3. Study of FIREWALL
- 4. Connect the computers in Local Area Network.
- 5. Study of Network IP.

5a. IPV4

5b. IPV6

- 6. Study of Network Topologies
  - 6a. Bus Topology
  - 6b. Ring Toplogy
  - 6c. Star Topology
- 7. Study of MAC address and port numbers.



					2018 R	Regulati	ion						
Subject Code	e: Su	bject N	ame :						T / L/	L	Τ/	<b>P</b> /	С
BCS18OL5		PHI	/ MySQ	GRAMMING LAB				ETL		S.Lr	R		
	Pr	Prerequisite: Basic of com				puters, DBMS, HTML,			Lb	0	0/0	3/0	1
		ML.											
L : Lecture T	: Tuto	rial Sl	Lr : Supe	rvised l	Learnin	g P:P	roject 1	R : Rese	earch C:	Credits			
T/L/ETL : Th	eory/L	.ab/Emb	edded T	heory a	nd Lab								
OBJECTIVE	ES :												
• T	o Beco	ome a V	Veb Site	develop	er / Pro	gramm	er						
• T	o Enal	ole the S	Students	to beco	me expe	ert in M	IySQL.						
COURSE OU	JTCO	MES (	<b>COs</b> ):(3	3- 5)									
CO1	Understand the requirement and develop the website.												
CO2	To establish a back-end connectivity for data storage and utilization.												
Mapping of	Course	e Outco	mes wit	h Progi	ram Ou	itcome	s (POs)						
COs/POs	<b>PO1</b>	PO2	PO3	PO4	PO5	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	PO9	PO10	) PO11	1 PO12	
CO1	Η	Μ	L	L	Μ	L	L	L	L	L	L	Μ	
CO2	H	Μ	L	L	Μ	L	L	L	L	L	L	Μ	
COs / PSOs	PS	01	PSO	02	PSO3 PSO4			<b>SO4</b>	PS		PSO6		
	H		M		L		L		L		M	M	
CO2	H		Μ		L		L		L		Μ		
H/M/L indica	ates St	rength	of Corre	elation	H- H	igh, M	- Mediu	um, L-l	Low				
Category	Basic Sciences	Engineering Sciences	Humanities and Social Sciences	Program Core	Program Electives	Open Electives	Practical / Project	Internships / Technical Skill	Soft Skills				
							~						



Course Code	Course Title	Τ/	L	Τ/	<b>P/ R</b>	С
		L/		S.Lr		
		ЕТ				
		L				
BCS18OL5	PHP / MySQL PROGRAMMING LAB	Lb	0	0/0	0/0	1

- To Become a Web Site developer / Programmer
- To Enable the Students to become expert in MySQL.
- 1. Use of select statements for queries
- 2. Nested queries using SQL
- 3. Built in functions in SQL
- 4. Update operations using SQL.
- 5. Use of index, creating views and querying in views
- 6. Create a php program to find odd or even number from given number
- 7. Write a php program to find maximum of three numbers.
- 8. Write a PHP program to swap two numbers.
- 9. Write a PHP Program to demonstrate the variable function: Gettype():
- 10. Write a PHP program to drop table using MySQL.
- 11. Create a student Registration in PHP and Save and Display the student Records
- 12. Write a program to Develop student registration form and display all the submitted data on another page.