Sunt TECHNOLOGICA H		SAMRAT ASHOK TECHNOLOGICAL INSTITUTE VIDISHA (M.P.) (A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV Bhopal)												
Jan Celet					Scheme of Exa	minati	on (Se	mester	·-IV)					
VIDISHA M.P.					for Batch Adm	itted in	sessio	on - 202	22-23					
		Bac	or of Technology (B. Tech.) – CSE(Blockchain) (Dept. of CS & IT)											
					Maxin	num Ma	rks A	llotted			Cont	act Hr	s. per	Total
Subject Code	Subject	Subject Name			Theory	Practical				Total		week		Credits
J	Category		ES	MS	Assignment	Quiz	ES	LW	Quiz	Marks	L	Т	Р	
BCC 251	DC	Computer Network	60	20	10	10	30	10	10	150	3	0	2	4
BCC 252	DC	Database Management System	60	20	10	10	30	10	10	150	3	0	2	4
BCC 253	DC	Foundation of Blockchain Technology	60	20	10	10	30	10	10	150	3	0	2	4
BCC 254	DC	Software Engineering	60	20	10	10				100	3	1	0	4
BCO 255	OC	Open Elective-II	60	20	10	10				100	3	0	0	3
BCL 256	DLC	Advance Java – Prog.					60	20	20	100	0	0	4	2
		Total	300	100	50	50	150	50	50	750	15	0	16	21
HUM 257	HEC	Holistic Education Course												Grade
VAO 258	VAO	Open Source Tools-I	Resp	ective	faculty to devel	op his/ ł	ner ow	n rubri	cs for eva	aluation.				Grade
ILC 250	ILC	Extracurricular Activities	It is a	a one c	redit per year ad	etivity en	ndorse	in eigł	nt semest	er mark shee	t			
MST: Minimum	n two mid seme	ester tests to be conducted during Sem	nester* N	MAC a	nd HEC courses	s classes	will b	e cond	ucted in	off hours (W	eekend	s)		



#### SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) DEPARTMENT OF CS & IT

Semester/Year         IV/II         Program         B.Tech - CSE(Blockchain)           Subject (ategory)         DC         Subject Code:         BCC-251         Subject Name         Computer Network           Maximum Marks Allotted         Practical         Total         Contact Hours         Total           ES         MS         Assignment         Quiz         ES         N/V         Quiz         Marks         I         T         P           ES         MS         Assignment         Quiz         ES         N/V         Quiz         Marks         I         T         P         4           Prerequisites:         Final Anowledge of analog and digital communication.         Computer Network Definitions, popular networks.         Understand the concepts of Network Layer, Transport Layer, Application Layer         Hrs.           UNTs         Computer Network: Definitions, goals, components, structure, Architecture, Classifications & the types, Growth, Complexity and applications etc. Layered Architecture, Proceol hierarchy, Commetion Oriented & Connection Descriptions of various layers and its comparison with TCP/IP. Network standardization         R         T           I         Starking, Tree, Ustandard Connecting Device: Active and Passive Hubs, Repaters, B         Bridges, Two & Three layers Provided, Praining & its methods, Flow Control, Error control, DLL Protocel: Elementary & Staiding Window. Figgybacking & Pipelining, MAC Sub B	- AN	Tel al	1		DE	PARTI	MENT O	OF CS & IT					
Subject Category Maximum Marks Allotted         BCC- 251         Subject Name         Computer Network           Maximum Marks Allotted         Total Theory         Total Category         Total Marks         Total Total Credits           ES         MS         Assignment         Quiz         ES         I/W         Quiz         Total Marks         Total Total Total           Fundamental knowledge of analog and digital communication.         Fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.         Be familiar with various types of computer networks.         Hrs.           Understand the concepts of Network Layer, Transport Layer, Application Layer         Totasifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Commetion Oriented & Connectioneless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of Various layers and its comparison with TCP/IP. Network standardization         8           II         Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, 8         8           Bridges, Two & Three layer switches & Gateway.         Data Link Layer: Need, Services Provided, Praining Window, Piggybacking & Pipelining, MAC Sub eories, Congestion Control, DLL Protocol: Elementary & Sliding Window, Piggybacking & Ripelining, MAC Sub eories, Congestion Control, Network Reference Network.         8           III         Iayer: State & Dynamic channel allocation, Med	Semeste	r/Year	IV/II	Prog	ram			B.Tee	ch – Cs	SE(Bloc	ckchai	in)	
Maximum Marks Allotted         Practical         Total         Contact Hours         Total Credits           Fiberoy         BS         Assignment         Quiz         ES         LW         Quiz         Marks         L         T         P           60         20         10         10         30         10         10         150         3         0         2         4           Prerequisites:           Fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.         B         Be familiar with various types of computer networks.         Hrs.           UNITS         Computer Network: Definitions, goals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Connection Oriented & Connectionless Services, Service primitive Dasign issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions OT various layers and its comparison with TCP/IP. Network standardization Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, 8         8           III         layer: State & Dynamic channel allocation, Media access contol for LAN & WANC Costal appreciation for LAN & WANC Consparison         8           III         layer: State & Dynamic channel allocation, Media accession Control for LAN & WANC Costal apprintime, Bust	Subject Categor	v DC	Subject Code:	BCC	C- 251	Sub Nan	ject ne	С	omput	ter Netw	vork		
Theory         Practical         Total         Cunlate Trouts         Credits           ES         10         10         30         10	Maximu	m Marks A	llotted	I			-		Con	to at IIa		Total	
ES         MS         Assignment         Quiz         ES         LW         Quiz         Marks         L         T         P           60         10         10         10         150         3         0         2         4           Prerequisites: Fundamental knowledge of analog and digital communication.           Commental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.           Be familiar with various types of computer networks.         Understand the concepts of Network Layer, Transport Layer, Application Layer         Hrs.           UNITS         Computer Network: Definitions, goals, components, struture, Architecture: Protocol hirarioty, types, Growth, Complexity and applications etc. Layered Architecture: Protocol hirarioty, functionality, ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization         Hrs.           I         Connection Oriented & Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.         8           Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control, DLL Protocol: Elementary & Sliding Window. Pigeybacking & Pipelining, MAC Sub layer: Stati & Dynamic channel allocation, Media access control for LAN & WANCollision free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.         8           IV	Theory	I		I	Prac	tical	1	Total	Con		urs	Credits	
60       20       10       10       10       150       3       0       2       4         Proceeding of the various aspects of computer networking and enables students to appreciate recent developments in the area.         •       Have fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.       •       •         •       Be familiar with various types of computer networks.       •       •       •         •       Understand the concepts of Network Layer, Transport Layer, Application Layer       •       •       •         •       Understand the concepts of Network Layer, Transport Layer, Application Layer       •       •       •         •       Understand the concepts of Network Layer, Transport Layer, Application Layer       •       •       •         •       Domestion Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization       •       •       •       *	ES	MS	Assignment	Quiz	ES	LW	Quiz	Marks	L	Т	Р		
Prerequisites:           Fundamental knowledge of analog and digital communication.           Course Objective:           • Have fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.           • Be familiar with various types of computer networks.           • UNTs         Computer Network: Definitions, goals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, connection Orsencetion Concetiones Services, Service primitive Design issues & its 8 functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization           Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Bridges, Two & Three layer switches & Gateway.           Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Sliding Window, Piggybacking & Pipelning MAC Sub paratic channel allocation, Media access control for LAN & WAN.COLISion 8 free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.           V         Protocol: Protocol: Return, Multicast Routing, Stuting Strategies, Congestion Control Algorithms: General Principles of Congestion control, Prevention Policies, Congestion Control Algorithms: General Principles of Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services, DNS,SMTP, FTP, HTTP, WWW, Virtual Terminal Protocol, VolP: Basic IP Telephone System.           V         Procec	60	20	10	10	30	10	10	150	3	0	2	4	
Prerequisites:           Fundamental knowledge of analog and digital communication.           Corree Objective:           • Have fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.           • Be familiar with various types of computer networks.           • Untris         Correstand the concepts of Network Layer, Transport Layer, Application Layer           UNITS         Computer Network: Definitions, goals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Connection Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization           Transmission Media, Sources of transmission inpairment. Network Topology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three of Varices Provided, Framing & its methods, Flow Control, Error control. DL Protocol: Elementary & Sliding Window, Piggybacking & Pipelining, MAC Sub free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.           IV         Processes to Processe Provided, Design issues, Routing algorithms: Least Cost Routing, Multicast Routing, Struting Strategies, Congestion Control Algorithms: General Principles of Congestion control protocol (TCP) – User Datagram Verocol, Data Traffic, Congestion Control, Prevention Policics, Congestion Control Algorithms: General Principles of Congestion control, Prevention Policocis, and features of the	D	••,											
Participation of the second structure of the various aspects of computer networking and enables students to appreciate recent developments in the area.         • Be familiar with various types of computer networks.         • Understand the concepts of Network Layer, Transport Layer, Application Layer <b>UNITS Descriptions</b> (computer Network: Definitions, goals, components, structure, Architecture; Classifications & types, Growth, Complexity and applications etc. Layered Architecture; Protocol hierarchy, Connection Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization         II       Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.         Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Silfing Window. Piggybacking & Pipelining. MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision 8 free & limited contenion protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.         IV       Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routing algorithm, Dijkstrats' algorithm, Bellman-ford algorithm, Hierarchical Routing, Broadeast Routing, Multicast Routing, Routing Strategies, Congestion Control Algorithms: General Principles of Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differen	Fundame	Isites:	day of apploa and d	aital aan		ation							
Construction       Have fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area.       Be familiar with various types of computer networks.         UNITS       Understand the concepts of Network Layer, Transport Layer, Application Layer       Hrs.         Computer Network: Definitions, geals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Connection Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization       Ramsmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.       Data Link Layer. Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Sliding Window. Piggybacking & Pipelining, MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD, CSMA/CA, IEEE 802 standards for LAN & MA & their comparison.         IV       Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithm, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control Nalgorithms: Reareal Principles of Congestion control Prevention Policies, Congestion Control Nalgorithms: Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control Nalgorithms: CO3: Explain the inportance of data communication works in data networks.       8 <t< td=""><td>Course</td><td>Thiective</td><th>uge of analog and di</th><td>igital con</td><th>munic</th><th>ation.</th><th></th><th></th><td></td><th></th><th></th><td></td></t<>	Course	Thiective	uge of analog and di	igital con	munic	ation.							
• Have induced elements in the area.         • Be familiar with various types of computer networks.         • Understand the concepts of Network Layer, Transport Layer, Application Layer         UNITS         Computer Network: Definitions, goals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Connection Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization         If star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.         Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Silding Window, Piggybacking & Pipelining, MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision 8 free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CCA, IEEE 802 standards for LAN & MAN & their comparison.         IV       Revork Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithm, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control Algorithms: General Principles of Congestion control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services, DNS,SMTP, FTP, HITTP, WWW, Virtual Terminal Protocol, VoIP: Basic IP Telephone System.       40         Course Outcomest       CO       Congestion Control and Quality of Service, sand fl		Have funda	mental knowledge	of the x	various	aspect	s of con	nuter networ	kina a	nd enal	hles s	students to	
Be familiar with various types of computer networks.     Understand the concepts of Network Layer, Transport Layer, Application Layer     UNITS     Computer Network: Definitions, goals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Connection Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization     Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, B     Bridges, Two & Three layer switches & Gateway.     Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Sliding Window. Piggybacking & Pipelining. MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.     Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithm, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control Algorithms: B General Principles of Congestion Control. Prevention Policies, Congestion Control Algorithms: Recental Principles of Processes Delivery: Transmission Control Protocol (TCP) – User Datagram Protocol, Data Traffic, Congestion Control and Quality of Service, Techniques to improve Virtual Terminal Protocol, VoIP: Basic IP Telephone System.     Total Hours		appreciate re	cent developments i	in the are	a.	uspeet	5 01 001	iiputer networ	king u	na ena	0103 3		
Understand the concepts of Network Layer , Transport Layer, Application Layer     UNITS     Computer Network: Definitions, goals, components, structure, Architecture, Classifications &     types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy,     Connection Oriented & Connectionless Services, Services primitive Design issues & its     functionality, ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and     its comparison with TCP/IP. Network standardization     Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus,     Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters,     Bridges, Two & Three layer switches & Gateway.     Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error     control. DLL Protocel: Elementary & Sliding Window. Piggybacking & Pipelining, MAC Sub     layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision     free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA,     IEEE 802 standards for LAN & MAN & their comparison.     Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost     Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithms: Least Cost     Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithms: Least Cost     Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithms:     General Principles of Congestion Control and Quality of Service; Cechniques to improve     QOS, Integrated Services, and Differentiated Services, DNS,SMTP, FTP, HITTP, WWW,     Virtual Terminal Protocol, VoIP: Basic IP Telephone System.     40 Course Outcomes:     CO1: Develop a fundamental understanding of network design principles and structure of computer network.     CO2: Explain the importance of data communication, how communication works in data networks and the internet,     recognize the different internetworking devices and their f	•	Be familiar v	with various types of	f compute	er netw	orks.							
UNITS         Descriptions         Hrs.           Computer Network: Definitions, goals, components, structure, Architecture, Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy, Connection Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization         8           II         Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.         8           Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Sitofing Window, Piggybacking & Pipelining, MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.         8           IV         Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithm, Hierarchical Routing, Broadcast Routing, Muticast Routing, Routing Strategies, Congestion Control In Virtual-Circuit Subnets, Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services, DNS,SMTP, FTP, HTTP, WWW, Virtual Terminal Protocol, VoIP: Basic IP Telephone System.         40           Course Outcome:           Colspan=the different intermetworking devices and their functions. <td and="" colspa:="" design="" moring="" network="" of="" principle<="" protocol,="" sender="" td=""><td>•</td><td>Understand t</td><th>he concepts of Netv</th><td>vork Lay</td><th>er ,Trar</th><th>nsport I</th><th>Layer, Ap</th><th>plication Laye</th><td>r</td><th></th><th></th><td></td></td>	<td>•</td> <td>Understand t</td> <th>he concepts of Netv</th> <td>vork Lay</td> <th>er ,Trar</th> <th>nsport I</th> <th>Layer, Ap</th> <th>plication Laye</th> <td>r</td> <th></th> <th></th> <td></td>	•	Understand t	he concepts of Netv	vork Lay	er ,Trar	nsport I	Layer, Ap	plication Laye	r			
Computer Network: Definitions, goals, components, structure, Architecture; Classifications & types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy,         I       Connection Oriented & Connectionless Services, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization         Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Bridges, Two & Three layer switches & Gateway.         Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control, DLL Protocol: Elementary & Sliding Window. Piggybacking & Pipelining. MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision 8         free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.         IV       Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control Algorithms: General Principles of Congestion Control in Datagram subnets.Comparison of IPv4 & IPv6, Mobile IP.         IV       Processes to Processes Delivery: Transmission Control Protocol (TCP) – User Datagram Protocol, Data Traffic, Congestion Control in Datagram subnets.Comparison of IPv4 & IPv6, Mobile IP.         V       Processes to Processes Delivery: Transmission Control Protocol (TCP) – User Datagram Protocol, Joal Traffic, Congestion Control Protocol (TCP) – User Datagram Protocol, Data Traffic, Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services, DNS,SMTP, FTP, HTTP, WWW, Virtual Terminal Protocool, VoIP: Basic IP Telephone System. <td>UNITs</td> <td colspan="12">UNITs Descriptions</td>	UNITs	UNITs Descriptions											
types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy,       8         I       Connection Oriented & Connectionless Services, Service primitive Design issues & its       8         functionality, ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and       8         its comparison with TCP/IP. Network standardization       7         Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus,       8         Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters,       8         Bridges, Two & Three layer switches & Gateway.       0         Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error       control. DLL Protocol: Elementary & Sliding Window. Piggybacking & Pipelining. MAC Sub         III       layer: Static & Dynamic channel allocation, Media access control for LAN & WAN Collision       8         free & limited contention protocol/LOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA,       EEE 802 standards for LAN & MAN & their comparison.       8         IV       Roadcast Routing, Multicast Routing, Routing Strategies, Congestion Control algorithms:       8       8         General Principles of Congestion control, Prevention Policies, Congestion Control in Virtual-Circuit Subnets, Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services, DNS,SMTP, FTP, HTTP, WWW, Virtual Terminal Protocol, VIP: Basic IP Telephone System.       40		Computer Network: Definitions, goals, components, structure, Architecture, Classifications &											
1       Connection Oriented & Connectionless Service, Service primitive Design issues & its functionality. ISO-OSI Reference Model: Principle, Model, Descriptions of various layers and its comparison with TCP/IP. Network standardization       8         11       Transmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.       8         Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Silding Window. Piggybacking & Pipelining. MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.       8         IV       Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithm, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control In Virtual-Circuit Subnets, Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services,DNS,SMTP, FTP, HTTP, WWW, Virtual Terminal Protocol, VoIP: Basic IP Telephone System.       40         Course Outcomes:       CO3: Explain the importance of data communications, how communication works in data networks and the internet, recognize the different internetworking devices and their functions.       8         C01: Develop a fundamental understanding of network design principles and structure of computer network.       40         C02: Explai		types, Growth, Complexity and applications etc. Layered Architecture: Protocol hierarchy,											
Intertonality. ISO-OSI Reference Model: Principle, Model, Descriptions of Various layers and its comparison with TCP/IP. Network standardization         ITansmission Media, Sources of transmission impairment. Network Topology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.         Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Sliding Window. Piggybacking & Pipelining. MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision       8         III       hypers the contention protocolALOHA : pure, slotted CSMA, CSMA/CD, CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.       8         Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routing algorithm, Dilkstra's algorithm, Bellama-ford algorithm, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control Algorithms: General Principles of Congestion control, Prevention Policies, Congestion Control Algorithms: General Principles of Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services,DNS,SMTP, FTP, HTTP, WWW, Virtual Terminal Protocol, VoIP: Basic IP Telephone System.       40         Col: Develop a fundamental understanding of network design principles and structure of computer network.       40         CO2: Explain the importance of data communications, how communication works in data networks and the internet, recognize the different intermetworking devices and their functions.       40         CO3: Explain the role of protocols in networki		Connection Oriented & Connectionless Services, Service primitive Design issues & its											
Its Comparison With TCP/TF. Technology: Mesh, Bus, Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.       8         II       Star, Ring, Tree, etc. Standards Connecting Devices: Active and Passive Hubs, Repeaters, Bridges, Two & Three layer switches & Gateway.       8         Data Link Layer: Need, Services Provided, Framing & its methods, Flow Control, Error control. DLL Protocol: Elementary & Sliding Window. Piggybacking & Pipelining. MAC Sub layer: Static & Dynamic channel allocation, Media access control for LAN & WAN.Collision free & limited contention protocolALOHA : pure, slotted CSMA, CSMA/CD,CSMA/CA, IEEE 802 standards for LAN & MAN & their comparison.       8         IV       Network Layer: Need, Services Provided, Design issues, Routing algorithms: Least Cost Routing algorithm, Dijkstra's algorithm, Bellman-ford algorithm, Hierarchical Routing, Broadcast Routing, Multicast Routing, Routing Strategies, Congestion Control in Virtual- Circuit Subnets, Congestion control, Prevention Policies, Congestion Control in Virtual- Circuit Subnets, Congestion Control and Quality of Service, Techniques to improve QOS, Integrated Services, and Differentiated Services,DNS,SMTP, FTP, HTTP, WWW, Virtual Terminal Protocol, VolP: Basic IP Telephone System.       40         C01: Develop a fundamental understanding of network design principles and structure of computer network.       C02: Explain the inportance of data communications, how communication works in data networks and the internet, recognize the different internetworking devices and their functions.       40         C04: Analyze the features and operations of various routing protocols such as Bellman-ford algorithm, Hierarchical Routing, Broadcast		its comparison with TCP/IP. Network standardization											
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Routing, Broadcast Routing, Multicast Routing.         CO5: Describe and examine working of Transport Layer and Application Layer protocol. <b>Text Book</b> 1. Tanenbaum A. S, "Computer Networks", Pearson Education , 4th Edition         2. William Stallings, "Data and Computer Communications", PHI 6th Edition .	CO4: Ar	alyze the fe	atures and operation	ns of vari	ious ro	uting p	rotocols s	such as Bellma	n-ford	algorit	hm, H	ierarchical	
Text Book         1. Tanenbaum A. S, "Computer Networks", Pearson Education , 4th Edition         2. William Stallings, "Data and Computer Communications", PHI 6th Edition .	Kouting,	Broadcast R	outing, Multicast R	outing. Francoart	Lover	and A.	nlication	I aver protoco	1				
<ol> <li>Tanenbaum A. S, "Computer Networks", Pearson Education , 4th Edition</li> <li>William Stallings, "Data and Computer Communications", PHI 6th Edition .</li> </ol> Reference Books-	Text Bo	serioe allu ez	Aannie working of	ransport	Layer	anu Ap	prication		1.				
<ol> <li>William Stallings, "Data and Computer Communications", PHI 6th Edition .</li> <li>Reference Books-</li> </ol>	1. 7	Fanenbaum A	A. S. "Computer Net	works"	Pearson	1 Educe	ation 4th	Edition					
Reference Books-	2. \	William Stall	ings, "Data and Cor	nputer C	ommur	ication	s", PHI 6	th Edition .					
	Referen												

1. Douglas E. Comer, "Computer Network & Internet", Pearson Education, 6th Edition.

- 2. Behraj A Forouzan,"Data Communication & Networking", McGraw-Hill,4th edition.
- 3. Natalia Olifar& Victor Olifer,"Computer Networks", Willey Pub.
- 4. Prakash C. Gupta, "Data Comunications and Computer Networks", PHI,2end edition.
- 5. Gallo,"Computer Communication & Networking Technologies", Cengage Learning. 1st edition.

# List/Links of e-learning resource

https://nptel.ac.in/courses/106105081

#### **Modes of Evaluation and Rubric**

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

### **CO-PO Mapping:**

0010		<u>- 5 '</u>												
COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	<b>PO</b> <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO-1	3	2											3	
CO-2	3	3			1								2	
CO-3	3	3	1		1							3		3
CO-4	3	3	2	1								1		3
CO-5	3	3										1	2	

#### Suggestive list of experiments:

1. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.

- 2. Study of Network Devices in detail.
- 3. Demonstrate single parity bit for error detection.
- 4. To understand error detection and correction technique Implement hamming code.
- 5. To understand error detection technique Implement CRC.
- 6. To understand working of framing method Implement bit stuffing with start and end flag.
- 7. To understand farming methods implement character count farming method.
- 8. To study and understand network IP.
- 9. Connect the computer in local Area Network.

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

AND TECHNOLOGIC	v. ) 2	SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) DEPARTMENT OF CS & IT												
Semester/Ye	ar	IV/II		Pro	gram		B.Tec	ch – CSE	(Bloc	ckchai	n)			
Subject Category	DC	Subject Code:	BCC	C- 252	Su N	bject ame	Databa	se Manag	geme	nt Sys	tem			
	т	Maximum	Marks A	Allotted	D (*		TAL	Conta	et H	ours	Total			
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<ul> <li>To the</li> <li>To re</li> <li>To le</li> <li>To un</li> <li>To be</li> </ul>	present a earn the funderstand ecome far	database system us indamentals of data the basic issues of miliar with database	ing ER c models, transacti	liagram relatior on proc structur	s and to nal alge essing a res and	b learn no bra, and s and concu access tee	structure of the second s	chniques	c sys	item.				
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Ι	Introduc manager E/R Mo relations	ction: Purpose of Da ment system, three- del - Conceptual da ships, relationship t	itabase S schema ta model pes, E/F	System - archited ling - m R diagra	- View cture of otivatio m nota	vs of data f DBMS, on, entitie tion, exar	<ul> <li>data models</li> <li>components</li> <li>s, entity types</li> <li>nples.</li> </ul>	s, databas of DBMS , attribute	e 3. es		6			
II	Image: Telationship (ypes, E/K diagram notation, examples.         Relational Model: Relational Data Model - Concept of relations, schema-instance distinction, keys, referential integrity and foreign keys, relational algebra operators, SQL - Introduction, data definition in SQL, table, key and foreign key definitions, 8 update behaviors. Querying in SQL, notion of aggregation, aggregation functions group by and having clauses.													
III	Databas depende covers, propertie	e Design: Depender encies, Armstrong's definitions of 1NF es of them, algorith	ncies and axioms , 2NF, 3 ms for 31	d Norma for FI 3NF and NF and	al form D's, clo d BCN BCNF	s, depend osure of F, decom normaliza	lency theory - a set of FD's npositions and ation, 4NF, an	functiona , minima l desirabl d 5NF.	ıl ıl e		9			
IV	Transact processi error rec	tions: Transaction p ng, ACID propertie covery and logging,	processir s, concu undo, re	ng and l irrency ido, und	Error re control o-redo	ecovery - , locking logging a	concepts of t based protoco nd recovery m	transactions for CC nethods.	n 2,		9			
V	Impleme secondat techniqu	entation Techniques ry index structures, ues, multi-level inde	: Data S various xes, B+	torage a index s trees.	and Ind tructure	exes - file es - hash-	e organizations based, dynam	s, primary ic hashin	/, g		8			
Total Hours											40			
Course Outc CO-1: Under CO-2: Discus CO-3: Use kt CO-4: Execu CO-5: Articu	stand the stand the commowledge the transaction	basic concepts, prin nponents of DBMS to find the function ction concepts and c pasic concept of stor	nciples and data mo- nal depen- oncurrer age and	nd appl odels, R odencies ocy prot access t	ications elations and di ocols echniqu	s of datab al models fferentiat ues.	ase systems. e between diff	erent nor	mal f	forms.				
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List/Links of	e-learni	ng resource	1/106104	125/										
https	://nptel.ac	c.in/courses/106/10/ c.in/courses/106/10/	<u>+/100104</u> 5/106106	<u>133/</u> 5220										
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The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester theory and practical examination.

CO-PO	CO-PO Mapping:													
COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO-1	1	1	2										1	2
CO-2	3	2	2										1	2
CO-3	2	1	2		2								1	2
CO-4	2	1	2											2
CO-5	2	2	2											1
Suggesti	ve list o	of expe	riments	:										
1. De	sign a I	Databas	e and cr	eate req	uired ta	ables. F	or e.g. I	Bank, C	ollege I	Databas	e			
2. Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables														
3. W1	3. Write a sql statement for implementing ALTER, UPDATE and DELETE													
4. Wi	rite the	queries	to impl	ement tl	he joins									
5. Wi	rite the	query fo	or imple	menting	g the ag	gregate	function	ons						
6. Wi	rite the	query to	o impler	nent the	e concej	ot of Int	egrity c	onstrai	nts					
7. Wi	rite the	query to	o create	the view	WS									
8. Pe	rform tł	ne queri	es with	group b	y and h	aving c	lauses							
9. Pe	rform tł	ne follov	wing op	eration	for den	nonstrat	ing the	insertio	n , upda	ation an	d deletic	n using	the refere	ntial
int	integrity constraints													
10. Wi	10. Write the query for creating the users and their role													
Recomm	endatio	n by Bo	oard of s	studies o	on									
Approva	l by Ac	ademic	council	on										

Compiled and designed by	
Subject handled by department	Department of CS & IT

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CO-1

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#### SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal)

VIDISHA M	and the second s	Bache	or of Te	chnolo	gy B.Te	ch in C	CSE (Blockcha	in Tech	nolog	y)	
Semester/	Year	IV/II	Prog	ram			B.Teo	ch – CS	E(Bloc	ckchai	in)
Subject Category	, DC	Subject Code:	BCC	2-253	Sub Na	oject me	Foundatio	n of Blo	ockcha	in tec	hnology
		Maximum	Marks A	Allotted	1			Con	toot H	ours	Total
	]	Theory			Practic	al	Total	Con		ours	Credits
ES	MS	Assignment	Quiz	ES	LW	Quiz	Marks	L	Т	P	
60	20	10	10	30	10	10	150	3	0	2	4
Prerequis Basic Kno Course O	ites: wledge of 1 bjective:	nathematics.									
• Te • E • R	chnology b merging tre eal-world a	behind blockchain ends in blockchain . applications of block	chain								
UNITS				Desci	riptions						Hrs.
Ι	Introduction landscape cryptosystem	on to Blockchain Te of digitalization, ems, private vs publ	chnology introduct ic block	v: Basic ion to chain and the second seco	ideas be cryptog nd use ca	ehind bl graphic ases, Ha	ock chain, how concepts, Has ish Puzzles	v it is ch shing, 1	anging public	g the key	8
Π	Blockchair associated, concept in	n Fundamentals: , Characteristics of Blockchain.	Basic a Block o	rchitect chain, 7	ture of Types of	Block f netwo	cchain, differe orks, Introducio	ent ter ng Sma	minolo rt con	gies tract	8
III	Componen Blockchair	ts of Blockchain: n Protocol, Permissi	Core c on & Per	ompon missior	ents of 1 less Bl	Blocko ock cha	chain, Types ins,	of Blo	ck cha	iins;	8
IV	Digital Le Ethereum, Composer Emerging R3 Corda,	edger: Short Histor Introduction to Hy Trends in Blockcha Blockchain API, Bl	y of M perledger in: Cloud ockchain	oney a r, Hype l-based i Sandb	ind Trus erledger block cl oxes	st, Bitc Fabric a hain, Mi	oin Mechanics and its archited ulti chain, Geth	s, Intro cture, H 1 , Stella	duction yperlee ar , Rip	1 to dger ople,	8
v	Block Cha (IoT), Ren (Renewabl	in Use Cases: Supp mittance, Land Ro e Energy)	ly Chain ecords,	Manag Voting	and el	Finance ection,	, Health Care, Loyalty Prog	Internet grams,	t of Th Go G	ings reen	8
Total Hou	irs										40
Course O	utcomes:										
CO-1: Und CO-2: Und CO-3: Ex CO-4: Cor CO-5: And	lerstand the lerstand bas plain Core npare the w alyse the im	e basic concepts, pri sic architecture of B components of Bloc vorking of different aportance of block c	nciples a lock cha k chain, block cha hain in fi	nd appl in, Char Types c ain plat nding t	ications racteristi of Block forms. he soluti	of block ics of B chains;	k chain. lock chain. Blockchain Pr te real-world pr	otocol. roblems			
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1. An cu 2. Sc Re	rrency". ott Marks,	"Blockchain for Be Blockchain Techn	ginners: ( ology", (	Guide to Create S	o Unders Space Inc	standing	g the Foundatio ent Publishing I	on and B Platform	asics o	of the	x Crypto
Reference	Books-										
1. M 2. Al	ark Watney wyn Bisho	v, "Blockchain for B p, "Blockchain Tecl	eginners mology l	". Explain	ed".						
List/Links	of e-learn	ing resource									
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Modes of	Evaluation	and Rubric					<u> </u>			1	
The evaluation theory and	tion modes practical e	s consist of perform xamination.	ance in t	wo mid	l semeste	er Tests,	, Quiz/Assignn	nents, te	erm wo	rk, en	d semester
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COs	PO <sub>1</sub> PO	2 PO <sub>3</sub> PO <sub>4</sub> I	PO <sub>5</sub> PO	$D_6   P$	$\mathbf{O}_7 \mid \mathbf{PC}$	D <sub>8</sub> PO	$\mathbf{PO}_{1} = \mathbf{PO}_{1}$	D <sub>11</sub> PC	$\mathbf{D}_{12}$	PSO1	PSO2

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CO-2	3	1						1	3
CO-3	3	2						2	1
CO-4	3	3	2						3
CO-5	3	3	2					3	
0	1. 4	. C	• •						

#### Suggestive list of experiments:

1. Study of bitcoin and P2P Payment gateway.

2. Study of Hyperledger Architecture and its features.

3. Create a simple Ethereum network model.

4. Write a simple chaincode API model.

5. Generate the crypto material for the various participants in the bootstrapping network.

6. Generate the genesis block for the Orderer node and start ordering service (solo node) in the bootstrapping network.

7. Generated the configuration transaction block to create a new channel in the bootstrapping network.

8. Sign the configuration block and create the new channel.

9. Make peers of all the organizations join the channel that we created in the bootstrapping network.

10. Study of Hyperledger Explorer and Hyperledger Composer Solution.

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

A LEAST LEAST		<b>S</b> (2	AMRAT (I An Auto	T ASH( Engined nomou DEI	OK TE ering C s Instit PARTM	CHNOL ollege), ' ute Affil 1ENT O	OGICAL INS VIDISHA M.H iated to RGPV F CS & IT	TITUT ?. 7 Bhopa	E I)						
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Subject Category	DC	Subject Code:	BC	C-254	Su N	bject ame	Sof	tware E	ngine	ering					
		Maximum	Marks A	llotted				Cont	act H	ours	Total				
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Prerequisite	es:														
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Course Obj	ective:	. 1 1 1 .			<u> </u>	•	1 1	60.0	F	•	•				
• 10 ll	ntroduce s	students to the basic brief hands-on over	view of s	s, testin softwar	ig techn	iques and	d applications of	of Softwa	are En	igineer	ing.				
• 10 p	velop and	write a software pro	view of s	osal.	e deven	Spinent I	ne cycle.								
Deve	elop and v	write a Software Re	quiremen	ts Spec	rificatio	n.									
• To u	inderstand	d and apply the var	ious pha	ses of s	oftware	e develop	oment like info	rmation	gathe	ring, f	easibility,				
Proc	ess mode	l, analysis, design, I	Estimatio	ns, qua	lity, ris	k, mainte	enance, reengin	eering.							
UNITS			]	Descrip	otions					H	lrs.				
	Introdu	ction to Software an	d Softwa	are Eng	ineerin	g The Ev	volving Role of	Softwar	e,						
	Process	Models The Line	Sollware	e Engin stial M	odel T	A Layer	typing Model	, Soliwa The RA							
I	Model.	Incremental Mode	l. Spiral	. Evolu	itionary	Process	Models. Agi	le Proce	ss		8				
	Model,	Component-Based	Develop	ment, t	he capa	bility m	aturity model i	integratio	on						
	(CMMI	(CMMI), ISO 9000 Models.													
	Software Requirements: Functional and non-functional requirements, user														
	require	ments, system re	equireme	nts, i	nterface	e speci	fication, the	softwa	re						
II	require	ments document. I	Requirem	lents e	require	ing proc	ess: Feasibilit	y studie	s,		8				
	manage	ement System mod	els: Cor	itext m	odels	behavior	al models dat	a model	s						
	object n	nodels, structured m	ethods.			o chia (101	ur mouels, uu	a moue	,						
	Softwar	re Project Planning,	Design	Method	lologies	and So	ftware Metrics	, Softwa	re						
	Project	Planning: Project	t plann	ing o	bjective	s, Deco	omposition T	echnique	s,						
	Empiric	cal estimation mod	els, Soft	ware P	roject	Estimatio	on Models, Cl	PM/PER	Г.						
III	Design	concept: Design Pi	inciples,	Abstra	sign not	refinem	ent modularity	, effectiv	re		8				
	design	methodologies. &	design 1	nethod	s. Soft	ware Me	asurement and	1. Metric	s:						
	Various	s Size Oriented Me	easures:	Haleste	ead's S	oftware	Science, Func	tion Poi	nt						
	(FP) Ba	used Measures, Cycl	omatic C	Complex	kity Me	asures: C	Control Flow G	raphs.							
	Softwar	re Testing, Testing (	Objective	s, Unit	Testing	g, Integra	tion Testing, A	cceptan	ce						
	Testing	, Regression Testing	g, Testing	g for Fu	inctiona	ulity and $T \to T$	Testing for Per	formanc	e,						
IV	Structur	wn and Bouom-C ral Testing (White	p Tesu Box Tes	ng Stra ting) P	alegies: Function	nal Testi	ng (Black Box	r Testino	ns,		8				
1.4	Test Da	ata Suit Preparation	n. Alpha	and B	leta Tes	sting of	Products. Stat	ic Testi	5), 1g		0				
	Strategi	ies: Formal Techn	ical Rev	views (	Peer F	Reviews)	, Walk Throu	igh, Co	de						
	Inspecti	ion, Compliance wit	h Design	and Co	oding S	tandards	•								
	Softwar	re Maintenance and	Softwar	re Reer	ngineeri	ng, Soft	ware as an Ev	olutiona	ry						
	Entity,	Need for Main	itenance,	Cate	gories	ot M	aintenance: F	reventiv	e,						
V	Reengin	e,Corrective and P	Enginee	ring	enance, Softwa	Cost of	figuration M	, Sonwa	re nt		8				
· ·	Activiti	es. Change Contro	Process	s. Softv	vare V	ersion C	control. An Ov	verview	of		0				
	CASE	Tools, Risk manag	ement:	Reactiv	e vs pi	roactive	risk strategies	, softwa	re						
	risks, ri	sk identification, ris	k project	ion, ris	k refine	ment, Rl	MMM plan.								
Total Hours	6									4	40				
Course Out	comes:			1	. 1: 0	1									
CO-1: Interp	pret and ju	ustify different softv	vare deve	elopmer	nt life c	ycle mod	lels.								

CO-2: Understand the requirement analysis and identify state & behavior of real world software projects.

**CO-3**: Use various design methodologies to derive solutions for software project.

**CO-4**: Evaluate and quantify the quality of software though evaluation metrics.

CO-5: Identify and analyse the risk in development. CO-5: Evaluate different testing methods for software project management.

# Text Books:-

- 1. Roger S. Pressman, "Soflware Engineering A Practitioner's Approach", Seventh Edition, McGraw-Hill International Edition, 2010.
- 2. Rajib Mall, "Fundamentals of Software Engineering", Third Edition, PHI Learning Private Limited, 2009.

## **Reference Books:-**

- 1. Elis Awad, "System Analysis & Design", Galgotia publications.
- 2. PankajJalote "Software Engg" Narosa Publications.
- 3. Ian Sommerville: Software Engineering 6/e (Addison-Wesley).
- 4. Richard Fairley: Software Engineering Concepts (TMH).
- 5. Hans Vans Vilet, "Software Engineering Principles and Practice", Wiley.
- 6. SrinivasanDesikan and Gopalaswamy : Software Testing, Principle.

#### List/Links of e-learning resource

https://onlinecourses.nptel.ac.in/noc23\_cs122/preview

#### Modes of Evaluation and Rubric

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

#### **CO-PO Mapping:**

COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	PO <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	<b>PO</b> <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO-1	3	3	1	1								2	3	1
CO-2	3	2	3	2								3	2	
CO-3	3	2	1	3	2							2	2	2
<b>CO-4</b>	2	3	2	2			3						2	2
CO-5	2	2	1									3	1	2

Suggestive list of design methodology tools:-

1. Develop requirements specification for a given problem (The requirements specification should include both functional and non-functional requirements. For a set of about 10 sample problems .

- 2. Develop DFD Model (Level 0, Level 1 DFD and data dictionary) of the sample problem.
- 3. Develop UML Use case model for a sample problem .
- 4. Develop Sequence Diagrams.
- 5. Develop Class diagrams.
- 6. Use testing tool such as junit
- 7. To compute cyclometic complexity for any flow graph.
- 8. Using configuration management tool-libra.
- 9. Use CPM/PERT for scheduling the assigned project.

10. Use Gantt Charts to track progress of the assigned project.

Recommendation by Board of studies on

Approval by Academic council on	
Compiled and designed by	

Subject handled by department

Department of CS & IT



#### SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) DEPARTMENT OF CS & IT

Semester/Vear         IV/II         Program         B.Tech - CSE(Blockchain)           Subject         DI.C         Subject Code:         BCI-256         Subject         Advanced Java Programming           Image: Category         Practical         Total         Contact Hours         Total           ES         MS         Assignment         Quiz         ES         L         T         P           -         -         -         60         20         100         0         4         2           Perceguisites:         -         -         -         60         20         100         0         4         2           Concepts of object oriented programming and core java.         Concepts and improve the ability general problem solving abilities in programming.         - <td< th=""><th>VIDISHA M.S.</th><th>(</th><th>× ×</th><th></th><th>DEF</th><th>PARTN</th><th>1ENT O</th><th>F CS &amp; IT</th><th>•</th><th>,</th><th></th><th></th></td<>	VIDISHA M.S.	(	× ×		DEF	PARTN	1ENT O	F CS & IT	•	,					
Subject Category         DLC         Subject Code:         BCL-256         Sume         Advanced Java Programming           Theory         Practical         Total         Contact Hours         Total           ES         MS         Assignment         Quiz         ES         L         T         P           -         -         -         -         -         Contact Hours         Total           Concepts of object oriented programming and core java.           Concepts of object oriented programming and core java.         Concepts of object oriented programming.         B         F         To introduce and understand students to programming concepts and techniques using the Java language and programming environment, class and objects.         To learn about lifetime, scope and the initialization mechanism of variables and improve the ability general problem solving abilities in programming.         B           10         Basic Java Features - C++ Vs JAVA, JAVA Virtual machine, Exception Handling, File and Streams, Visibility, Constructors, Operator and Methods Overloading, Static Methods, Inheritace Claecitons. Netract Recol Recol and Class Collections, Herbody, Class Priority Methody, Generic Classes, Collections.         8           11         Basic Java Features - Multithreading: Multithreading with GUI, Monitors and Monitor Lo	Semester/Ye	nester/Year     IV/II     Program     B.Tech - CSE(Blockchain)       ubject ategory     DLC     Subject Code:     BCL-256     Subject Name     Advanced Java Programming													
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II       Lists, Array List and Iterator, Uniked List, Vector. Collections Algorithms: sort, shuffle, reverse, fill, copy, max and min ,binary Search, Stack Class of Package java. Util, Class Priority Queue and Interface Queue, Maps, Properties Class, Ummodifiable Collections.       8         III       Advance Java Features - Multithreading: Multithreading with GUI, Monitors and Monitor Locks. Networking: Manipulating URLs, Reading a file on a Web Server, Socket programming, Security and the Network, RMI, Networking, Accessing Databases with JDBC.       8         IV       Advance Java Technologies - Servlets: Overview and Architecture, Handling HTTP & HTTPS, get Requests, USINg JDBC from a Servlet, Java Server Pages (JSP): First JSP Example, JSP elements, JSP tag library, Session tracking, Java Cryptographic Architecture(JCA).       8         V       Advance Web/Internet Programming (Overview): Struts- Basics of MVC, architecture, CRUD, Spring- framework introduction.       8         C01: Use the syntax and semantics of java programming language and basic concepts of OOP.       400         C02: Write basic Java applications and use arrays.       400         C03: Develop reusable programming the concepts of RMI and JDBC.       400         C04: Apply the concepts of Servlet and JSP using advanced tools.       605: Design event driven GUI and web related applications which mimic the real word scenarios.         Text Book:-       1.       E. Balaguruswamy, "Programming In Java"; TMH Publications         1.       E. Balaguruswamy, "Programming In Java"; TMH Publications/Prentice Hall         Lists/L		Java C	Collective Frame W	Ork - ( Callacti	Jeneric	s: Intr	oduction	n, Overloading	g Gener	nc					
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<ul> <li>CO3: Develop redshoe programs using the concepts of RMI and 3DDC.</li> <li>CO4: Apply the concepts of Servlet and JSP using advanced tools.</li> <li>CO5: Design event driven GUI and web related applications which mimic the real word scenarios.</li> <li>Text Book:- <ol> <li>E. Balaguruswamy, "Programming In Java"; TMH Publications</li> <li>The Complete Reference: Herbert Schildt, TMH</li> </ol> </li> <li>Reference Books- <ol> <li>Deitel&amp;Deitel, "JAVA, How to Program"; PHI, Pearson</li> <li>Cay Horstmann, Big JAVA, Wiley India</li> <li>Merlin Hughes, et al; Java Network Programming , Manning Publications/Prentice Hall</li> </ol> </li> <li>List/Links of e-learning resource <ul> <li>https://archive.nptel.ac.in/courses/106/105/106105191/</li> </ul> </li> </ul>	CO2: write i	on reusab	le programs using the	se allays	nts of R	MI and	IDRC								
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<ol> <li>E. Balaguruswamy, "Programming In Java"; TMH Publications</li> <li>The Complete Reference: Herbert Schildt, TMH</li> <li>Reference Books-</li> <li>Deitel&amp;Deitel, "JAVA, How to Program"; PHI, Pearson</li> <li>Cay Horstmann, Big JAVA, Wiley India</li> <li>Merlin Hughes, et al; Java Network Programming , Manning Publications/Prentice Hall</li> <li>List/Links of e-learning resource         <ul> <li>https://archive.nptel.ac.in/courses/106/105/106105191/</li> </ul> </li> <li>Modes of Evaluation and Rubric</li> </ol>	Text Book:-				•										
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<ol> <li>Deitel&amp;Deitel, "JAVA, How to Program"; PHI, Pearson</li> <li>Cay Horstmann, Big JAVA, Wiley India</li> <li>Merlin Hughes, et al; Java Network Programming , Manning Publications/Prentice Hall</li> <li>List/Links of e-learning resource         <ul> <li>https://archive.nptel.ac.in/courses/106/105/106105191/</li> </ul> </li> <li>Modes of Evaluation and Rubric</li> </ol>	Reference B	ooks-													
<ul> <li>4. Cay Horstmann, Big JAVA, Wiley India</li> <li>5. Merlin Hughes, et al; Java Network Programming, Manning Publications/Prentice Hall</li> <li>List/Links of e-learning resource         <ul> <li>https://archive.nptel.ac.in/courses/106/105/106105191/</li> </ul> </li> <li>Modes of Evaluation and Rubric</li> </ul>	3. Deitel&	Deitel, "J	IAVA, How to Prog	ram"; PF	II, Pear	son									
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The evaluation modes consist of performance in two mid semester Tests, Quiz/Assignments, term work, end semester practical examination.

CO-PO	Mappi	ng:												
COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	<b>PO</b> <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO-1	2	2	2										1	2
CO-2	2	2	2										1	2
CO-3	2	1	2	1									1	2
CO-4	2	1	2	1										2
CO-5	2	2	1	1									1	2
Suggesti	ive list o	of expe	riments	:										
1. Inst	allation	of JDK												
2. Wri	ite a pro	gram to	show S	Scope of	Variab	les								
3. Wri	ite a pro	gram to	show C	Concept	of CLA	SS in J	AVA							
4. Wri	ite a pro	gram to	show T	Type Ca	sting in	JAVA								
5. Wri	ite a pro	gram to	show F	How Exe	ception	Handlir	ng is in .	JAVA						
6. Wri	ite a Pro	gram to	show I	nheritar	nce									
7. Wri	Write a program to show Polymorphism													
8. Wri	Vrite a program to show Access Specifiers (Public, Private, Protected) in JAVA													
9. Wri	rite a program to show use and Advantages of CONSTRUCTOR													
10. Wri	ite a pro	gram to	show I	nterfaci	ng betw	een two	o classes	5						
11. Wri	ite a pro	gram to	Add a	Class to	a Packa	age								
12. Wri	ite a pro	gram to	show I	life Cyc	le of a [	Thread								
13. Wri	ite a pro	gram to	demon	strate A	WT.									
14. Wri	ite a pro	gram to	Hide a	Class										
15. Wri	ite a Pro	gram to	show I	Data Bas	se Conn	ectivity	Using.	JAVA						
16. Wri	ite a Pro	gram to	show "	HELLO	) JAVA	" in Ex	xplorer ι	ising Aj	pplet					
17. Wri	ite a Pro	gram to	show (	Connect	ivity usi	ing JDB	BC							
18. Wri	8. Write a program to demonstrate multithreading using Java.													
19. Wri	ite a pro	gram to	demon	strate ap	plet life	e cycle.								
20. Wri	ite a pro	gram to	demon	strate co	oncept c	of servle	et.							
Recomm	nendatio	n by Bo	oard of s	studies o	on									
Approva	l by Ac	ademic	council	on										
Compile	d and d	esigned	by											
Subject l	handled	by depa	artment					Depart	ment of	CS &	IT			

# Open Courses launched by Programme are not applicable for students of parental programme

Open Course Offered by CSE(BC) Session: 2023-24 Semester IV												
Open Course-II (BCO-255)	Α	B	С									
	Foundation of Data Science	Microprocessor	Foundation of Block chain Technology									
Prerequisite	Basic Knowledge of	Digital electronics	Basic Knowledge of mathematics.									
	mathematics.											
Remark	Not applicable for -AIADS	Not applicable for - IoT	Open to all									



# SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal)

**DEPARTMENT OF CS & IT** 

Semester/Year         IV/II         Program         B.Tech – CSE           Subject         BCO-										lockc	hain)					
Subject Category	OC	Subject Code	e:	BCO- 255(A)	Subj	ect Name	Found	lation	of D	ata S	cience					
		Maximu	ım Mar	ks Allotte	d			C	ontac	et	Total					
	Th	eory			Practic	al	Total	1	Iours	5	Credits					
ES	MS	Assignment	Quiz	ES	LW	Quiz	Marks	L	T	Р						
60	20	10	10	-	-	-	100	3	0	0	3					
			•		1											
<b>Prerequisites:</b>																
Basic Knowled	lge of m	athematics.														
		e:														
<b>Course Object</b>	tive:	e: cnowledge and expertise to become a proficient data scientist:														
• To provide th	e knowledge and expertise to become a proficient data scientist;															
• Demonstrate	an unde	e knowledge and expertise to become a proficient data scientist; an understanding of statistics and machine learning concepts that are vital for data science;														
<ul> <li>Produce Pyth</li> </ul>	on code	to statistically a	nalyze a	dataset;												
• Critically eva	luate da	ta visualizations	based of	n their des	ign and u	se for comm	nunicating st	ories f	rom d	lata;						
UNITs				Descri	ptions					]	Hrs.					
I	Data Science-What is Data Science, Need for Data Science, Difference between         Data Science & Business Intelligence, Data Science Components, Tools for Data         Science, Data Science Life cycle, Applications         of Data Science, Data Science Ethics. Representation of Data- Types of data,         primary, secondary, quantitative and qualitative data. Types of Measurements,         nominal, ordinal, discrete and continuous data.															
	Presen	tation of data by	tables,	constructi	on of fre	quency distr	ibutions for	discre	te							

Ι	Data Science & Business Intelligence, Data Science Components, Tools for Data Science, Data Science Life cycle, Applications of Data Science, Data Science Ethics. Representation of Data- Types of data, primary, secondary, quantitative and qualitative data. Types of Measurements, nominal, ordinal, discrete and continuous data.	7
П	Presentation of data by tables, construction of frequency distributions for discrete and continuous data.Graphical representation of a frequency distribution by histogram and frequency polygon, cumulative frequency distributions. Data Pre- processing- Knowing Data, Data Cleaning, Data Integration, Data Selection, Data Transformation	7
III	Descriptive Statistics-Arithmetic mean, Median, Mode, Geometric mean, Harmonic mean. Partition values: Quartiles, Deciles and percentiles. Measures of dispersion: Mean deviation, Quartile deviation, Standard deviation, Coefficient of variation. Moments: measures of skewness, Kurtosis	7
IV	Correlation-Scatter plot, Karl Pearson coefficient of correlation, Spearman's rank correlation coefficient, multiple and partial correlations. Regression: Concept of errors, Principles of Least Square, Simple linear regression and its properties. Types of Regressions.	7
V	Basics of Big Data, Problem handling large data, general techniques for handling large data, Basic concept of Machine Learning, training model, validating model, supervised & unsupervised learning.	7

**Total Hours** 

**Course Outcomes:** 

CO1: To explain how data is collected, managed and stored for data science.

**CO2**: To understand the key concepts in data science, including their real-world applications and the toolkit used by data scientists.

35

CO3: To implement data collection and management scripts using Mongo DB.

**CO4:** Examine the techniques of Data Visualization.

**CO5:** Identification of various applications of Data Science.

**Text Books** 

1. "Introducing Data Science" by Davy Cielen, Arno D. B. Meysman, Mohamed Ali, 1st Edition, Manning Publications Co.

2. "An Introduction to Probability and Statistics" by Rohatgi V.K and Saleh E, 3rd

Edition, John Wiley & Sons Inc., New Jersey,

3. "Data Mining Concept & Techniques" by Han & Kember, 3rd Edition, The Morgan Kaufmann,

#### **Reference Books**

- 1. Joel Grus, Data Science from Scratch, Shroff Publisher/O'Reilly Publisher Media
- 2. Annalyn Ng, Kenneth Soo, Numsense Data Science for the Layman, Shroff Publisher Publisher

3. Cathy O'Neil and Rachel Schutt. Doing Data Science, Straight Talk from The Frontline. O'Reilly Publisher.

#### List/Links of e-learning resource

• https://nptel.ac.in/courses/106106179

# Modes of Evaluation and Rubric

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

CO-PO	Mappi	ng:													
COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	<b>PO</b> <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2	
CO-1	1	3		2									1	2	
<b>CO-2</b>	2	2											2	2	
CO-3	2	1	3										1	2	
<b>CO-4</b>	1	2											3	1	
CO-5	3	3		2									2	3	
Recomm	nendatio	on by Bo	oard of s	studies o	on										
Approva	ıl by Ac	ademic	council	on											
Compile	d and d	esigned	by												
Subject	handled	by depa	artment					Depa	rtment	of CS &	: IT				



#### SAMRAT ASHOK TECHNOLOGICAL INSTITUTE (Engineering College), VIDISHA M.P. (An Autonomous Institute Affiliated to RGPV Bhopal) DEPARTMENT OF CS & IT

VIDISHA M.R.	1			DEPA	RTMENT O	F CS & IT	-							
Semester/Ye	IV/II         Program         B.Tech - CSE(Blockchain)           OC         Subject Code:         BCO-255 (B)         Subject Name         Microprocessor													
Subject Category	OC	Subject Code	: BCC	D-255 (B)	Subjec Name	t	Micro	proc	essor	,				
	l	Maximu	n Marks A	Allotted			Conte	at U	01116	Total				
	ſ	Theory		P	ractical	Total	Conta		ours	Credits				
ES	MS	Assignment	Quiz	ES 1	LW Quiz	Marks	L	<u>T</u>	P					
60	20	10	10	-		100	3	0	0	3				
Duonoquisito	a.													
Digital electr	s: onics													
Course Obje	ective.													
• The object	ctive of	this course is to	become	familiar y	with the arch	itecture and t	he instruc	tion	set of	f an Intel				
microproc	essor.		o c c c c c c c c c c c c c c c c c c c	iummu ,	the area		ne monu	tion	500 01	un mor				
• Assembly	languag	e programming v	vill be stu	died as v	vell as the de	esign of vario	us types o	of dig	gital an	nd analog				
interfaces.						C	51			U				
To introdu	ace 8051	microcontrollers.												
UNITs			]	Descripti	ons				H	Irs.				
	Introdu	ction: Evolution o	f micropro	cessor, ar	chitecture, ins	struction, Instr	uction sets	\$,						
T	Arithme	etic and Logic In	struction,	Program	control instru	ction, address	ing modes	\$,		7				
1	physica	I memory organi	zation, gei	neral bus	operation, I/	O addressing	capability	', ~		/				
	microp	c language, ass	execution	nguage,	nign level	language, pr	ogrammin	g						
	8086 architecture: ALU, Timing and control Unit, Registers, data and Address bus,													
т	8086 architecture: ALU, Timing and control Unit, Registers, data and Address bus, instructions format, addressing modes, stack structure, interrupts, and interrupts													
11	service routines; interrupt cycle, maskable and non maskable interrupts, maximum													
	service routines; interrupt cycle, maskable and non maskable interrupts, maximum mode, minimum mode, timing and delays.													
Ш	8086 P	rogramming: Ma	chine leve	el progra	m, machine	coding of the	e progran	I,		7				
111	instruct	ions set, Assembly	/ language	programi	ning, assemb	ler directives o	perators.			7				
	Periphe	rals and interfacin	g: memory	y interfaci	ng, I/O ports,	I/O ports inter	facing, I/0	)		_				
IV	ports A	ddressing, PIO 8	255, 8253	interval	timer, 8259A	Programmab	le Interrup	ot		7				
	Control	ler,	DMA tree	nafara an	d amonationa		t differen	+						
	o237 L	nductor technolog	DIVIA tra	norv cacl	e memory a	ddressing of th	i, unierer	11 7						
v	address	ing capacity of	the CPU	.80286/80	)386/80486/P	entium: salie	nt feature	, s		7				
	Microco	ontroller 8051, ar	chitecture,	register s	set, Instructio	n set, Interrup	ts of 8051							
	Intel's H	Family of 8-bit an	1 16-bit mi	icrocontro	ller.	, I		- -						
<b>Total Hours</b>										35				
Course Outc	comes:													
CO-1: Descr	ibe archi	tecture and instruc	tions, Diff	ferentiate	among differe	ent programmi	ng langua	ge; de	efine v	arious				
addressing m	odes and	memory organiza	tion.	4 1	. 1 1	<b>c</b>		1						
instructions	y the diff	nd the importance	of interru	sters, and a	routine	of microproces	sors. writ	e and	use a	merent				
<b>CO-3:</b> Write	and use a	assembly level co	les to solv	e problem	is									
CO-4: Identi	fy the ne	ed of interfacing u	inits and de	escribe va	rious interfac	ing chips.								
CO-5: Differ	entiate b	etween microproc	essor and 1	microcont	roller and Un	derstand the ad	lvance fea	tures	of adv	ance				
microprocess	ors (8020	0, 286).												
<b>Text Book:-</b>														
1. A.K.Ray I	K. M. Bh	urchandi, "Advan	ced Micro	processor	and periphera	als" TMH								
2. Douglas	s V Hall,	"Microprocessors	and interf	acıng – Pı	ogramming &	k Hardware" 1	MH							
<b>Reference B</b>	00KS-	a intal Mianana -	000	06" Dag	on Education									
1. Barry B. I 2 Kenneth	orey, "Th	"The 8086 Mior	ussor – 808	oo, Pears	ming & Inter	facing The PC	"Cenaage	Lear	nina					
3. Krishna	Kant "N	Aicroprocessors a	nd Microco	ontrollers'	'. PHI Learnin	laonig The FC	,congage	Leal	mig					
4. R.S. Ga	onkar ""N	Aicroprocessors a	nd interfac	ing", TM	, Н	-0								
List/Links of	f e-learni	ing resource												

# https://archive.nptel.ac.in/courses/108/103/108103157/

# https://archive.nptel.ac.in/co Modes of Evaluation and Rubric

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

CO-PO	Mappi	ng:												
COs	PO <sub>1</sub>	PO <sub>2</sub>	PO <sub>3</sub>	PO <sub>4</sub>	PO <sub>5</sub>	PO <sub>6</sub>	<b>PO</b> <sub>7</sub>	PO <sub>8</sub>	PO <sub>9</sub>	PO <sub>1</sub>	<b>PO</b> <sub>11</sub>	<b>PO</b> <sub>12</sub>	PSO1	PSO2
CO-1	2	2	2	1									1	2
CO-2	2	2	2	1									1	2
CO-3	2	2	2	1									2	2
CO-4	2	2	2	1									2	2
CO-5	2	1	1	1									2	2
Recomm	nendatio	on by Bo	oard of s	studies o	on									
Approval by Academic council on														
Compiled and designed by														
Subject handled by department								Department of CS & IT						

AND	OLOGICE H			Bach	SAN (An helor o	/IRAT (Er Autono <b>f Tech</b>	ASH Igineo omou <b>nolog</b>	OK TE ering Co Is Institu <b>gy B.Te</b>	CHNO ollege), ite Affi ch in (	LO VI iliat C <b>SI</b>	GICAL DISHA ted to RC E <b>(Block</b>	INST M.P. GPV I Kchai	TTU Bho n T	JTE opal) echn	olog	gy)		
Semeste	r/Year		Ι	V/II	I	Progra	m	1			B	B.Tech	1 – 1	CSE	(Blo	ockel	hai	1)
Subjec	rv   (	DC	Subje	ect Code	e:   F	BCO-		Sul	oject		Founda	tion (	of E	Block	k ch	ain 7	[ec]	nnology
	- 3	I	Ν	laximu	m Mar	ks All	otted	1	init				6	onte	not I	Jour	G	Total
EG		T	heory				<b>D</b> O	Practic	al .		Tota	l			<u> </u>	IUUI	3	Credits
ES 60		<u>MS</u> 20	Assi	gnment	: Qu	liz A	ES	LW	Quiz		Mark	KS		2	<u> </u>		י ר	3
00		20		10	1	U	-	-	-		100		•	5	U		J	
Prerequ	isites:																	
Basic Kn	nowledg	e of n	nathemati	ics.														
Course (	Objecti	ve:																
• ']	l'echnol	ogy be	ehind blo	ckchain														
•	Emergii Real w	ng trei orld ar	nds in blo	ockenair	1. 	in												
UNITS	ICCal-wo	onu aj	plication	15 01 010		III I	)escr	intions										Hrs
	Introduction to Blockchain Technology: Basic ideas behind block chain, how it is changing the													e	111.54			
I	lands	cape	of digita	lization	, intro	duction	n to	cryptog	graphic	co	oncepts,	Hasł	ning	g, pi	ıblic	ke	y	7
	crypto	systems, private vs public block chain and use cases, Hash Puzzles chain Fundamentals: Basic architecture of Blockchain, different terminologies																
п	Blockchain Fundamentals: Basic architecture of Blockchain, different terminologies associated, Characteristics of Block chain, Types of networks, Introducing Smart contract														s	7		
	assoc	concept in Blockchain.														τ	/	
	Comr	ponents of Blockchain: Core components of Blockchain, Types of Block chains;														:		
	Block	chain	hain Protocol, Permission & Permission less Block chains,													,	7	
IV	Blockchain Protocol, Permission & Permission less Block chains,         Digital Ledger: Short History of Money and Trust, Bitcoin Mechanics, Introduction to Ethereum, Introduction to Hyperledger, Hyperledger Fabric and its architecture, Hyperledger Composer         Emerging Trends in Blockchain: Cloud-based block chain, Multi chain, Geth , Stellar , Ripple, R3 Corda, Blockchain API, Blockchain Sandboxes													r r	7			
V	Block (IoT) (Rene	c Chai , Ren ewable	n Use Ca nittance, e Energy)	uses: Su	pply Cl Record	hain M ls, Vo	anag ting	ement, and el	Finance ection,	e, H L	Iealth C oyalty	are, I Progr	nter	rnet o s, G	of T io (	'hing Greei	s 1	7
Total Ho	ours		0,7															35
Course (	Outcom	nes:	<u> </u>							_								
CO-1: U	ndersta	nd the	basic con	ncepts, p	orincipl	es and	appli	cations	of bloc	ck c	hain.							
CO-2: 0	nderstar	lu das	omponer	ots of Bl	ock ch	cnain, ain Tv	Char nes o	f Block	chains	$\cdot R^{1}$	к спап. lockchai	n Pro	toc	റി				
CO-4: Co	ompare	the w	orking of	differen	nt block	c chain	platf	forms.	cildillis	, D	loekenui		100	01.				
CO-5: A	nalyse t	he imj	portance	of block	c chain	in find	ing th	ne solut	ion to t	he r	real-wor	ld pro	oble	ems.				
Text Boo	ok & R	eferen	ice Book	s-					_									
3.	Artemis	s Caro	, "Blocka	chain: T	he Beg	inners	Guid	e to Un	lerstan	ding	g the Te	chnol	ogy	v Beł	nind	Bited	oine	z Crypto
	Scott M	/". arke "	Blocksh	ain for I	Reginn	are Gu	ide to	Under	standin	a th	e Four	lation	0.00	d Po	sice	ofth	e	
	Revoluti	ionarv	Blockch	ain Tecl	hnolog	v". Cre	ate S	pace In	depend	ent	Publish	ing Pl	latfo	orm.	5105	oru		
5. N	Mark W	atney,	, "Blockc	hain for	Begin	ners".		r	I			8						
6. <i>I</i>	Alwyn I	Bishop	, "Block	chain Te	echnolo	ogy Exp	olaine	ed".										
List/Lin	ks of e-	learni	ng resou	irce	14 -	4.6.1.	0.61-	100.01										
	nttps://a	rchive	.nptel.ac.	.1n/cours	ses/106	/104/1	06104	4220/		_			_				_	
The evel	uation *	nodec	consist c	of perfor	rmance	in two	mid	semest	er Test	. 0	miz/Acc	ianm	ento	tor	m 117	ork	end	semester
theory ex	aminat	ion.	0115151 (	n perior	mance	in two	mu	semest	1 ICSU	э, Q	2012/ ASS	igiiiii	onts	, 1011	111 W	υıκ,	CIIC	semester
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CO-PO	Mappin	ig:	DO	PO	PO	DO	D/	)   D/	)   P4	0	PO	PO	-	DC		DO	1	DEO2
$CO_{-1}$	<b>rU</b> <sub>1</sub> 3	rU <sub>2</sub>	rU <sub>3</sub>		rU <sub>5</sub>	rU <sub>6</sub>		7 P(	78 P	9	rU <sub>1</sub>	rU <sub>1</sub>	1	rU	12	130	Л	3
CO-2	3	1																3
		-	1			I	1				1					-		

CO-3	3	2									2	1
CO-4	3	3	2									3
CO-5	3	3	2								3	
Suggestiv	ve list o	of expe	riments	:								
Recomme	endatio	n by Bo	oard of s	studies	on							
Approval	by Ac	ademic	council	on								
Compiled	l and de	esigned	by									
Subject h	andled	by depa	artment				Depar	rtment	of CS &	IT		