ST. ALOYSIUS COLLEGE (AUTONOMOUS), JABALPUR

PART A: Introduction

Program: Certificate	Class: B.Sc.	Year: I Year (sem 1)	Session: 2022-23
Subject: Computer Science			
I.	Course Code	S I-COSC 1T	
2.	Course Title	Computer System Architecture (Paper 1)	
3.	Course Type (Elective/Generic Elective)	Elective Course	
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/ Math in 12th class.	
5.	Course Outcomes(CO)	On completion of this course, learners will be able to: CO1. Understand the basic structure, operation and characteristics of digital computer. CO2. Be able to design simple combinational digital circuits based on given parameters. CO3. Familiarity with working of arithmetic and logic unit as well as the concept of pipelining. CO4. Know about hierarchical memory system including cache memories and virtual memory. CO5. Understand concept and advantages of parallel ism, threading, multi-processors and multi-core processors. Know the contributions of Indians in the field of computer architecture and related technologies.	
6.	Credit Value	Theory 3 Credits	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 35

PART B: Content of the Course		
Module	Topics	No. of Lectures
I	Fundamentals of Digital Electronics: Number System, Conversions, Binary Arithmetic, Complements, Fixed-Point Representation, Floating-Point Representation, Binary and other Codes, Error Detection Codes.	10
II	Logic Gates, Boolean Algebra, Map Simplification, K-Map, Combinational Circuits, Sequential Circuits, Simple Combinational circuit design problems.	10
III	Combinational Circuits- Adder, Subtractor, Multiplexer, De-multiplexer, Decoders, Encoders, Sequential Circuits - Flip - Flops, SR, D, T, JK,, Registers, Types of Registers, Counters, Types of Counters.	10
IV	Instructions, Instructions Formats, RISC, CISC, DMA Data Transfer, Auxiliary Memory, Cache Memory, Associative Memory, Virtual Memory, Flynn's classification - Introduction to SISD, SIMD, MISD, MIMD, Parallelism, Multicore processors.	10
Keywords/Tags: Digital Electronics, Logic Gates, Circuits, Instruction formats, Parallelism, Memory hierarchy, Multicore, Multi-threading, SISD, SIMD, MISD, MIMD.		
PART C: Learning Resources		
Textbooks, Reference Books, Other Resources		
Suggested Readings: • M. Morris Mano, "Computer System Architecture", PHI. • Heuring Jordan , "Computer System Design & Architecture" (A.W.L.) • William Stalling, "Computer Organization & Architecture", Pearson Education Asia. • V. Carl Hamacher , "Computer Organizat ion", TMH • Tannenbaum, "Structured Computer Organization ", PHI.		

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 **Marks** Three test will be taken of which best of two marks will be considered		**External Assessment**: University Exam (UE) : 60 **Marks** Time : **02.00 Hours**	
Objective type Text I	20 Marks	Section (A) : Very short questions (1 from each unit)	1 x 5 = 5 Marks
Class Test II (Subjective)	20 Marks	Section (B) : 5 Short Questions (200 Words Each)	4 x 5 = 20 Marks
Class Test III (**Subjective**)	20 Marks		
		Section (C): 5 Long Questions (500	7 x 5 = 35

		Words Each)	Marks
Total	**40 Marks**	Total	**60 Marks**

PART D: Content of the Course		
No. of Lab. Practical s (in hours per week): 2 Hrs. per week		
Total No. of Labs:		
	Suggestive list of Practical	No. of Labs.
	1. To study basic gates (AND, OR, NOT) and verify their truth tables. 2. To study and verify NAND as Universal gate using IC 7400. 3. To realize basic gate AND from Universal gate NAND. 4. To realize basic gate OR from Universal gate NAND. 5. To realize basic gate N OT from Universal gate NAND. 6. To study and verify NOR as Universal gate 7. To realize basic gate AND from Universal gate NOR. 8. To realize basic gate OR from Universal gate NOR. 9. To realize basic gate NOT from Universal gate NOR. 10. To study Half Adder using basic gates and verify its truth table. 11. To study Full Adder using basic gates and verify its truth table. 12. To design and construct RS flip Flop using gates and verifies the truth table. 13. To design and construct JK Flip Elop using gates and verifies the truth table. 14. To verify De-Morgan's First Law Theorem. 15. To verify De-Morgan's Second Law Theorem.	
	Keywords/Tags: Digital Electronics, Logic Gates, AN D, OR, NOT, IC7486, IC 7400, NAND, NOR, IC 7483, Circuits, Flip Flop, De-Morgan's	

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 **Marks**		**External Assessment**: University Exam (UE) : **60 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Lab Attendance	10 Marks	Practical record file	25 Marks
		Viva voce practical	10 Marks
Internal Viva	10 Marks	Execution	05 Marks
Practical File	20 Marks	Answer script	20 Marks
Total	**40 Marks**	**Total**	**60 Marks**

ST. ALOYSIUS COLLEGE (AUTONOMOUS), JABALPUR

PART A: Introduction

PROGRAM: Certificate | CLASS: B.Sc. | SEMESTER: I | SESSION: 2022-23

Subject: Computer Science

1.	Course Code	S1 - COSC 1T
2.	Course Title	Computer System Architecture (Paper I)
3.	Course Type	Major/Minor
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/ Math in 12th class.
5.	Course Learning Outcomes(CO)	On completion of this course, learners will be able to: CO1. Understand the basic structure, operation and characteristics of digital computer. CO2. Be able to design simple combinational digital circuits based on given parameters. CO3. Familiarity with working of arithmetic and logic unit as well as the concept of pipelining. CO4. Know about hierarchical memory system including cache memories and virtual memory. CO5. Understand concept and advantages of parallel ism, threading, multi-processors and multi-core processors. Know the contributions of Indians in the field of computer architecture and related technologies.
6.	Credit Value	Theory 4 Credits
7.	Total Marks	Max. Marks : 100 | Min. Passing Marks: 35

PART B: Content of the Course

No. of Lectures (in hours per week): 2 Hrs. per week

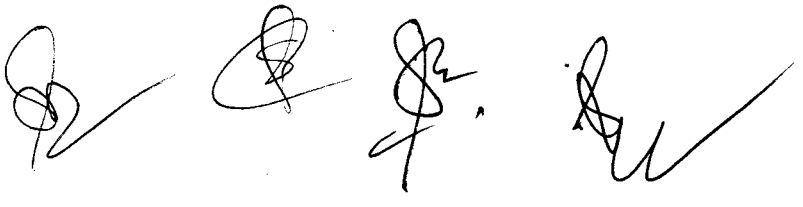
Total No. of Lectures: 60 Hrs.

Module	Topics	No. of Lectures
I	Fundamentals of Digital Electronics: Number System-Binary, Decimal, Octal, Hexa-Decimal, Conversions, Binary Arithmetic-Addition, Subtraction, Multiplication, Division, Underflow, Overflow, Sign Magnitude, Complements-1's and 2's, Fixed-Point Representation, Floating-Point Representation.	10
II	Boolean Algebra, Reducing Boolean Expression, Logic Gates-AND, OR, NOT, Universal Gates-NAND, NOR, Analog and Digital Signals, Clock Waveform Timing, Map Simplification, K-Map- Two, Three and Four variables.	10

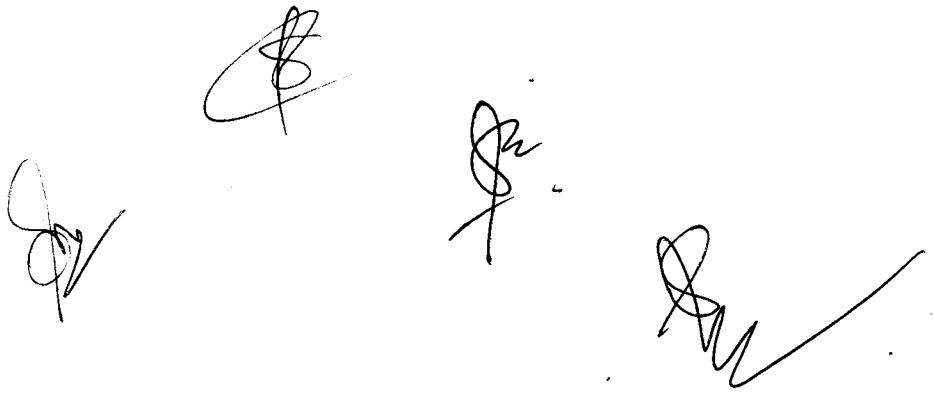
III	Combinational Circuits- Adder, Subtractor, Multiplexer, De-multiplexer, Decoders, Encoders, Binary Codes – Gray Codes, ASCII code, BCD code, EBCDIC, Error Detection Code and Correction Code, Hamming Code.	10
IV	Sequential Circuits - Flip - Flops, SR, D, T, JK, Master-Slave, Registers, Shift Registers- SISO, SIPO, PISO, PIPO, Counters, Instruction, Instruction Format, Instruction Codes, instructions Cycles, Addressing Modes.	10
V	Handshaking, Concepts of RISC, CISC, DMA Data Transfer, Auxiliary Memory, Cache Memory, Associative Memory, Virtual Memory, Flynn's classification - Introduction to SISD, SIMD, MISD, MIMD, Parallelism, Multicore processors.	10
Keywords/Tags: Digital Electronics, Logic Gates, Circuits, Instruction formats, Parallelism, Memory hierarchy, Multicore, Multi-threading, SISD, SIMD, MISD, MIMD.		

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 **Marks** Three test will be taken of which best of two marks will be considered		**External Assessment**: University Exam (UE) : 60 **Marks** Time : **02.00 Hours**	
Objective type Text I	20 Marks	Section (A) : Very short questions (1 from each unit)	1 x 5 = 5 Marks
Class Test II (Subjective)	20 Marks	Section (B) : 5 Short Questions (200 Words Each)	4 x 5 = 20 Marks
Class Test III **(Subjective)**	20 Marks	Section (C): 5 Long Questions (500 Words Each)	7 x 5 = 35 Marks
Total	**40 Marks**	Total	**60 Marks**
Any remarks/suggestions: **Focus of the course/teaching should be on developing ability of the student in analyzing a problem, building the logic and efficient code for the problem.**			

PART D: Content of the Course		
No. of Lab. Practical s (in hours per week): 2 Hrs. per week		
Total No. of Labs: 15Labs (30 HRS)		
	Suggestive list of Practical	No. of Labs.
	1. To study basic gates (AND, OR, NOT) and verify their truth tables. 2. To study and verify NAND as Universal gate using IC 7400. 3. To realize basic gate AND from Universal gate NAND. 4. To realize basic gate OR from Universal gate NAND. 5. To realize basic gate N OT from Universal gate NAND. 6. To study and verify NOR as Universal gate 7. To realize basic gate AND from Universal gate NOR. 8. To realize basic gate OR from Universal gate NOR. 9. To realize basic gate NOT from Universal gate NOR. 10. To study Half Adder using basic gates and verify its truth table. 11. To study Full Adder using basic gates and verify its truth table. 12. To design and construct RS flip Flop using gates and verifies the truth table. 13. To design and construct JK Flip Flop using gates and verifies the truth table. 14. To verify De-Morgan's First Law Theorem. 15. To verify De-Morgan's Second Law Theorem. 16. To study basic gates (AND, OR, NOT) and verify their truth tables. 17. To study and verify NAND as Universal gate using IC 7400. 18. To realize basic gate AND from Universal gate NAND. 19. To realize basic gate OR from Universal gate NAND. 20. To realize basic gate N OT from Universal gate NAND. 21. To study and verify NOR as Universal gate 22. To realize basic gate AND from Universal gate NOR. 23. To realize basic gate OR from Universal gate NOR. 24. To realize basic gate NOT from Universal gate NOR. 25. To study Half Adder using basic gates and verify its truth table. 26. To study Full Adder using basic gates and verify its truth table. 27. To design and construct RS flip Flop using gates and verifies the truth table. 28. To design and construct JK Flip Flop using gates and verifies the truth table. 29. To verify De-Morgan's First Law Theorem. 30. To verify De-Morgan's Second Law Theorem.	15
	Keywords/Tags: Digital Electronics, Logic Gates, AN D, OR, NOT, IC7486, IC 7400, NAND, NOR, IC 7483, Circuits, Flip Flop, De-Morgan's Theorem.	



PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : 40 **Marks**		**External Assessment**: University Exam (UE) : **60 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Lab Attendance	10 Marks	Practical record file	25 Marks
		Viva voce practical	10 Marks
Internal Viva	10 Marks	Execution	05 Marks
Practical File	20 Marks	Answer script	20 Marks
Total	**40 Marks**	**Total**	**60 Marks**



ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR

PART A: Introduction

Program: Diploma	Session: **2023-24**	Class: B.Sc.	Semester: III SEM
Subject: **Computer Science (B.Sc.)**			
1. Course Code		S2-COSC1T	
2. Course Title		Computer Networks & Information Security	
3. Course Type		Major / Minor	
4. Pre-Requisite (if any)		Nil	
Course learning outcome	**After Completing this course students will be able to** • Define and describe the components of a data communication system such as various protocols. OSI Model, data transmission in analog and digital format • Identify and differentiate among the network devices and drives • Learn and describe various error detection and correction methods. describe the Various terminologies used in Network and Application layers.		
5. Credit Value	Theory—4 Credits		
6. Total Marks	Max. Marks: **40+60**	Min. Passing Marks: 35	

PART B: Content of the Course

Lectures (in hours per week): 2 Hrs. per week

Total No. of Lectures (in hours): 60 Hrs.

Module	Topics	No. of Lectures
I	Introduction to Computer Network: Use of Computer network: Access to information, person-to-person communication electronic commerce, internet of things. Types of computer networks: Broadband access network, Mobile and wireless network, content delivery network, transit network, Enterprise network. Network Technology: Personal Area Network Local Area Network, Metropolitan Area Network, Wide Area Network, example of network (Internet, Mobile network, wireless network-Wi-Fi); Reference Model: OSI, TCP/IP, Critique of the OSI and TCP/IP reference models. Keywords: Io T Broadband, LAN MAN, WAN, OSI, TCP/IP	12
II	Physical Layer: Guided Transmission Media: Twisted pairs, coaxial cable, Fiber Optics; Wireless transmission: The electromagnetic spectrum, frequency hopping spread spectrum, direct sequence, spread spectrum, ultra deb communication; Cellular Network: Common concepts- cells, handoff, 1G 2G,3G,4G & 5G technology. Keywords: Coaxial cable, fiber optics, 2G,3G,4G 5G	12
III	Data Link Layer: Service Provided to Network Layer: Data Link Control: Framing, Flow and Error Control; Error detecting codes, Error-correcting codes; Data Link Protocols: Basic transmission and receipt, simplex link layer protocol, full duplex, sliding window protocol, Packet over SONET, ADSL, Point-to-Point Protocol. Switching Techniques: Packet Switching, Circuit Switching, Datagram Networks, Virtual-Circuit Networks, and Structure of a Switch. Network Devices & Drivers: Router, Modem, Repeater, Hub, Switch, Bridge and Gateway (fundamental concepts) Keywords: error correcting codes, error detecting codes, So NET, ADSL, point-to-point protocol, Router, Modem, Repeater, Hub, Switch, Bridge, Gateways.	12
IV	Network Layer: Routing Algorithm: Optimality, Principal of Shortest path algorithm, Flooding, Distance Vector Routing, Broadcast Routing;	12

	Congestion in network, traffic management approaches; IP addresses, IPv4 Addresses, IP v6 Addresses. Virtual Circuit Networks: Frame relay and ATM, Transport Layer: Process- Process Delivery; UDP, TCP. Application Layers: DNS, SMTP, POP, Ftp, http and https. Basics of Wi-Fi (Fundamental concepts Only).	
V	Network Security and Information Security: Fundamentals of network and information security: principles of security and attack. Security Goals (Confidentiality, Integrity, and Availability). Overview of Security Threats and Vulnerability: Types of attacks on Confidentiality, Integrity and Availability. Vulnerability and Threats: Phishing Attacks, E-mail threats, Web-threats, Intruders and Hackers, Insider threats, SQL injection Attacks, Ransomware. Malware: Worms, Virus Spams, Adware, Spyware, Trojans. Security Technology: Firewalls, intruding detection and prevention systems, Scanning and Analysis Tools: Biometric access controls, Cipher methods, cryptographic algorithms, cryptographic tools. Keywords: phishing, SQL injection, Worms, Computer virus, spyware, Trojans, Firewall, cipher, Cryptography	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- Andrew S. J. Wetherall, Computer Networks, 6th Edition,(2021), Pearson.
- J Mattord, Principles of Information Security, Fourth Edition, 6 th Indian Reprint.
- Praveen Kinnar Shur la, Surya Prakash Tripathi, Ritendra Goe 1 "Introduction to Information Security an Cyber Laws", 2014. Dreamtech Press.
- Books published by Hindi Granth Academy, Bhopal

Reference books:

- Kurose James F., Ross Keith W., Computer Networking, A 4 op-Down Approach, Sixth Edition, 2017. Pearson
- Micki Krausc. Harold F. Tipton, Handbook of Information Security Management, Vol. 1-3, CRC Press LLC.
- B. A. Forouzan: Data Communications and Networking. Fourth edition, TMH Publishing Company Ltd.
- Basta W. Halton, Computer Security: Concepts, Issues and Implementation, Cengage Learning India.

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	Total 40
External Assessment: Exam Section	Section(A): Objective Questions University Section(B): Short Questions Section(C): Long Questions	Total 60

ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR			
PART A: Introduction			
Program: Diploma	Session: **2023-24**	Class: B.Sc.	Semester: III SEM
Subject: **Computer Science (B.Sc.)**			
Course Code		S2-COSC 1T	
Course Title		Computer Networks & Information Security	
Course Type		LAB	
Pre-Requisite (if any)		Nil	
Course learning outcome	After completing lab course students will be able to: • Learn and identify various cables used in the Net working • Learn, and identify Various connectors used to connect different cables. • Use various tools for preparing the connectors for cables. • Configure and manage various local area networks.		
Credit Value		Practical— 2 Credits	
Total Marks	Max. Marks: **100**	Min. Passing Marks: 35	
PART B: Content of the Course			
Lectures (in hours per week): 1 Hrs. per week			
Total No. of Lectures (in hours): 30 Hrs.			
Module	**Topics**		**No. of Labs.**
	• Study of UTP cable o Color code of UTP cable Categories of UTP n/w cable o Shielding of n/w cable o Maximum length for which data cable can be used Crimping of RJ45 connector and punching of data cab1e • Knowledge of Structured Cabling and its components Information Information outlet with box o Network Rack (4U, 6U, 9U, 12U, 24U, 32U, 42U) o Patch Panel o Rack Management • Study of Optical Fiber cable o Different cores of OF C (6 core, 12, 24 core) Multimode & Single mode OFC cable Shielding of OFC o Splicing/Termination of OFC. OTDR Testing o LIU fix o LIU management (pigtail/fiber patchcord) and Media Converter. o FP module. o Rules of OFC laying • Use of tools o Crimping tool o Punching tool o Nose plier o Wire stripping and cable cutter o Multi-meter • Configuration/management of Local Area Network o Implementation of File and printer sharing Installation of ft server and client.		30

	○ Connect the computers to Local Area Network. ○ Configuring Class, A IP address on LAN Connection in Computer LAB and use the following tools: ○ Ping, ipconfig, getmac, hostname, nslookup, tracert, systeminfo. ○ routing using packet tracer software ○ Dynamic routing using packet tracer ○ Implementation of Subnetting in Class A, B, C ○ Ping between 2 s2'stems using lPv6	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks

- Andrew S. Tanenbaum, Nick Feamster, David J. Wetherall. Computer Nonworks, 6th Edition (2021), Pearson.
- Michael E Whitman and Herbert I Mattord, Principles of Information Security, Fourth Edition, CENG AGE Learning, 6th Indian Reprint.
- Books published by M.P. Hinai Granth Academy, Bhopal.

Reference books

- Hacking Exposed, Stuart McClure, Joel Scrambray, Ge urge Kurtz, TMII.
- Computer Security Art and Science, Matt Bishop, Pearson/PHI.

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE)	• Internal Viva: 20 Marks • Practical File: 20 Marks	Total 40
External Assessment University Exam Section	• Practical record file: 20 Marks • Viva voce practical: 10 Marks • Execution:10 Marks • Answer Script: 20 Marks	Total 60

PART A: Introduction

Program: Diploma	Session: **2023-24**	Class: B.Sc.	Year III SEM
Subject: **Computer Science (B.Sc.)**			
Course Code		S2-COSC 1T	
Course Title		Computer Networks & Information Security	
Course Type		Elective	
Pre-Requisite (if any)		Nil	
Course learning outcome	**After Completing this course students will be able to** • Define and describe the components of a data communication system such as various protocols. OSI Model, data transmission in analog and digital format • Identify and differentiate among the network devices and drives • Learn and describe various error detection and correction methods. describe the Various terminologies used in Network and Application layers.		
Credit	Theory—3 Credits	Practical— 1 Credits	

Value		
19. Total Marks	Max. Marks: **40+60**	Min. Passing Marks: 35

PART B: Content of the Course		
Lectures (in hours per week): 2 Hrs. per week		
Total No. of Lectures (in hours): 45 Hrs.		
Module	**Topics**	**No. of Lectures**
I	Introduction to Computer Network: Use of a Computer network: Access to information, person-to-person communication electronic commerce, internet of things. Types of computer networks: Broadband access networks, Mobile and wireless networks, content delivery networks, transit networks, and Enterprise networks. Network Technology: Personal Area Network Local Area Network, Metropolitan Area Network, Wide Area Network, an example of the network (Internet, Mobile network wireless network-Wi-Fi) Reference Model: OSI, TCP/lP, Critique of the OSI and FCP/IP reference models. Keywords: to T Broadband, LAN MAN. WAN, OSI, TCP/IP	12
II	Physical Layer: Guided Transmission Media: Twisted pairs, coaxial cable, Fiber Optics; wireless transmission: The electromagnetic spectrum, frequency hopping spread spectrum. direct sequence, spread spectrum, ultra deb communication; Cellular Network: Common concepts- cells, handoff; IG 2G,3G,4G & 5G technology. Keywords: Coaxial cable. fiber optics, 2G,.3G,4G,5G.	12
III	Data Link Layer: Service Provided to Network Layer: Data Link Control Framing, Flow and Error Control; Error detecting codes, Error-correcting codes; Data Link Protocols: Basic transmission and receipt, simplex link layer protocol. full duplex, sliding window protocol, Packet over SONET, ADSL, and Point-to-Point Protocol. Switching Techniques: Packet Switching, Circuit Switching, Datagram Networks. Virtual-Circuit Networks, and Structure of a Switch. Network Devices & Drivers: Router. Modem. Repeater. Hub. Switch, Bridge, and Gateway (fundamental concepts) Keywords: error correcting codes, error detecting codes, So SET, ADSL, point-to-point protocol, Router, Modem, Repeater. Hub, Switch, Bridge, Gateways.	11
IV	Network Layer: Routing Algorithm: Optimality, Principal of Shortest path algorithm, Flooding, Distance Vector Routing, Broadcast Routing; Congestion in the network, traffic management approaches; IP addresses, IPv4 Addresses, IP v6 Addresses. Virtual Circuit Networks: Frame relay and ATM, Transport Layer.- Process- Process Delivery: UDP, TCP. Application Layers: DNS, SMTP, POP, FTP, HTTP, and HTTPS. Basics of Wi-Fi (Fundamental concepts Only).	10

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings
Textbooks: • Andrew S. J. Wetherall, Computer Networks, 6th Edition,(2021), Pearson. • J Mattord, Principles of Information Security, Fourth Edition, 6 th Indian Reprint. • Praveen Kinnar Shur la, Surya Prakash Tripathi, Ritendra Goe 1 “Introduction to Information Security an Cyber Laws”, 2014. Dreamtech Press. • Books published by Hindi Granth Academy, Bhopal **Reference books:**

- Kurose James F., Ross Keith W., Computer Networking, A 4 op-Down Approach, Sixth Edition, 2017. Pearson
- Micki Krausc. Harold F. Tipton, Handbook of Information Security Management, Vol. 1-3, CRC Press LLC.
- B. A. Forouzan: Data Communications and Networking. Fourth edition, TMH Publishing Company Ltd.
- Basta W. Halton, Computer Security: Concepts, Issues and Implementation, Cengage Learning India.

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	Total 40
External Assessment: Exam Section:	Section(A): Objective Questions University Section(B): Short Questions Section(C): Long Questions	Total 60

ST. ALOYSIUS' COLLEGE(AUTONOMOUS) JABALPUR

PART A: Introduction

Program: Diploma	Session: **2023-24**	Class: B.Sc.	Year II Sem

Subject: **Computer Science (B.Sc.)**

Course Code	S2-COSC 1T
Course Title	Computer Networks & Information Security
Course Type	Elective
Pre-Requisite (if any)	Nil
Course learning outcome	After completing lab course students will be able to: • Learn and identify various cables used in the Net working • Learn, and identify Various connectors used to connect different cables. • Use various tools for preparing the connectors for cables. • Configure and manage various local area networks.
Credit Value	Practical— 1 Credits
Total Marks	Max. Marks: **100** / Min. Passing Marks: 35

PART B: Content of the Course

Lectures (in hours per week): 1 Hrs. per week

Total No. of Lectures (in hours): 15Hrs.

Module	Topics	No. of Labs.
	• Study of UTP cable o Color code of UTP cable Categories of UTP n/w cable o Shielding of n/w cable o Maximum length for which data cable can be used Crimping of RJ45 connector and punching of data cab1e • Knowledge of Structured Cabling and its components Information Information outlet with box o Network Rack (4U, 6U , 9U, 12U, 24U, 32U, 42U) o Patch Panel	15

	○ Rack Management • Study of Optical Fiber cable ○ Different cores of OF C (6 core, 12, 24 core) Multimode & Single mode OFC cable Shielding of OFC ○ Splicing/Termination of OFC. OTDR Testing ○ LIU fix ○ LIU management (pigtail/fiber patchcord) and Media Converter. ○ FP module. ○ Rules of OFC laying • Use of tools ○ Crimping tool ○ Punching tool ○ Nose plier ○ Wire stripping and cable cutter ○ Multi-meter • Configuration/management of Local Area Network ○ Implementation of File and printer sharing Installation of ft server and client. ○ Connect the computers to Local Area Network. ○ Configuring Class, A IP address on LAN Connection in Computer LAB and use the following tools: ○ Ping, ipconfig, getmac, hostname, nslookup, tracert, systeminfo. ○ routing using packet tracer software ○ Dynamic routing using packet tracer ○ Implementation of Subnetting in Class A, B, C ○ Ping between 2 s2'stems using lPv6	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks

- Andrew S. Tanenbaum, Nick Feamster, David J. Wetherall. Computer Nonworks, 6th Edition (2021), Pearson.
- Michael E Whitman and Herbert I Mattord, Principles of Information Security, Fourth Edition, CENG AGE Learning, 6th Indian Reprint.
- Books published by M.P. Hinai Granth Academy, Bhopal.

Reference books

- Hacking Exposed, Stuart McClure, Joel Scrambray, Ge urge Kurtz, TMII.
- Computer Security Art and Science, Matt Bishop, Pearson/PHI.

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100

Continuous Comprehensive Evaluation (CCE): 40 marks University Exam (UE) 60 marks

Internal Assessment Continuous Comprehensive Evaluation (CCE)	• LAB Attendance: 5 Marks • Internal Viva: 20 Marks • Practical File: 15 Marks	Total 40
External Assessment	• Practical record file: 20 Marks • Viva voce practical: 10 Marks • Execution:10 Marks • Answer Script: 20 Marks	Total 60