Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology (CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTCS301N	DCC	Discrete Structures	60	20	20	--	--	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs):

The student will have ability to:

1. Provide the fundamentals of formal techniques for solve the problems in computational domain and algorithm development.
2. Apply appropriate mathematical and statistical concepts and operations to interpret data and to solve problems
3. Formulate and evaluate possible solutions to problems, and select and defend the chosen solutions
4. Construct graphs and charts, interpret them, and draw appropriate conclusions.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.
The students will be able to:

1. Understand the notion of mathematical thinking, mathematical proofs, and algorithmic thinking, and be able to apply them in problem solving.
2. Define sets and perform operations and algebra on sets.
3. Demonstrate an understanding of relations and functions and be able to determine their properties.
4. Analyze logical propositions via truth tables.
5. Write an argument using logical notation and determine if the argument is or is not valid.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology (CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

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6. Understand some basic properties of graphs and related discrete structures and be able to relate these to practical examples.
7. Model problems in Computer Science using graphs and trees.
8. Be able to use effectively algebraic techniques to analyze basic discrete structures and algorithms.
9. Draw hasse diagram and identify lattice.
10. Understand generating functions and recurrence relation.

Syllabus:

UNIT I **10HRS**

Set Theory

Definition of Sets, Venn Diagrams, complements, Cartesian products, power sets, counting principle, cardinality and countability (Countable and Uncountable sets), pigeonhole principle. Relation: Definition, types of relation, domain and range of a relation, pictorial representation of relation, properties of relation, partial ordering relation. Function: Definition and types of function, composition of functions, recursively defined functions.

UNIT II **9 HRS**

Propositional logic

Proposition logic, basic logic, logical connectives, truth tables, tautologies, contradiction, normal forms(conjunctive and disjunctive), modus ponens and modus tollens, validity, predicate logic, universal and existential quantification. Notion of proof: proof by implication, converse, inverse, contrapositive, negation, and contradiction,proof by using truth table.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
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Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology (CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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UNIT III **9HRS**

Graph Theory

Terminology Graph Representation Graph isomorphism; Connectedness; Various graph properties; Euler & Hamiltonian graph; shortest paths algorithms. Trees: Terminology; Tree traversals; prefix codes; Spanning trees; Minimum spanning trees.

UNIT IV **8 HRS**

Algebraic Structure

Binary composition and its properties definition of algebraic structure; Groupoid, Semi group, Monoid Groups, Abelian Group, properties of groups, Permutation Groups, Sub Group, Cyclic Group, Rings and Fields (definition and standard results).

UNIT V **9 HRS**

Posets, Hasse Diagram and Lattices

Introduction, ordered set,well ordered set, Hasse diagram of partially,Lattices, properties of Lattices, bounded and complemented lattices.Generating functions, Solution by method of generating functions.Recurrence Relation and Generating Function: Introduction to Recurrence Relation, Linear recurrence relations with constant coefficients, Homogeneous solutions, Particular solutions, Total solutions.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
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Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology (CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Text Books:

1. Kenneth H. Rosen, "Discrete Mathematics and its applications", McGraw Hill, 8th Edition, 2021.
2. Seymour Lipschutz, M.Lipson, "Discrete Mathemataics" Tata McGraw Hill, 4thEdition, 2021.
3. C.L.Liu,D. P. Mohapatra "Elements of Discrete Mathematics" Tata McGraw-Hill Edition, 4th Edition, 2017

References:

1. Trembley, J.P &Manohar; "Discrete Mathematical Structure with Application CS", McGraw Hill, 1st Edition, 2017
2. Biswal,"Discrete Mathematics & Graph Theory", PHI, 4thEdition, 2015.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

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BTCS302N	DCC	Analysis & Design of Algorithms	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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Course Educational Objectives (CEOs):

The student will have ability to:
COURSE OBJECTIVE

1. To learn the algorithm analysis techniques.
2. To critically analyze the efficiency of alternative algorithmic solutions for the same problem
3. To understand the limitation of algorithm power.
4. To understand different algorithm design techniques.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

1. Define the basic concepts of algorithms and analyze the performance of algorithms.
2. Explain different standard algorithm design techniques, namely, divide & conquer,
3. Greedy, dynamic programming, backtracking and branch & bound.
4. Demonstrate standard algorithms for fundamental problems in Computer Science.
5. Design algorithms for a given problem using standard algorithm design techniques.
6. Analyze and compare the efficiency of various algorithms of a given problem.
7. Identify the limitations of algorithms in problem solving.
8. To identify the types of problem, formulate, analyze and compare the efficiency of Algorithms.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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Syllabus:

UNIT I **10HRS**

Algorithms Designing: Algorithms, Analyzing Algorithms, Asymptotic Notations, Heap Sort, Sorting and Searching Algorithms and their Analysis in terms of Space and Time Complexity.

Divide and Conquer:

General Method, Binary Search, Merge Sort, Quick Sort, Selection Sort, Strassen's Matrix Multiplication Algorithms.

UNIT II **9HRS**

Greedy Method: General Method, fractionalKnapsack Problem, Job Sequencing with Deadlines, Minimum-Cost Spanning Tree - Prim's and Kruskal's algorithm, Single Source Shortest Paths.

UNIT III **8HRS**

Dynamic Programming: General Method, Optimal Binary Search Trees, O/1 Knapsack, multistage graph, Traveling Salesperson Problem, All Pairs Shortest Paths.

UNIT IV **7HRS**

Backtracking: General Method, 8-Queens Problem, Graph Coloring, Hamiltonian Cycles, Sum of Subsets.

Branch and Bound: GeneralMethod, O/1 Knapsack Problem, Traveling Salesperson Problem.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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BTCS302N	DCC	Analysis & Design of Algorithms	60	20	20	30	20	3	0	2	4

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UNIT V **8HRS**

NP Hard and NP Complete Problems: Basic Concepts, Cook's Theorem, NP Hard Graph and NP Scheduling Problems, Some Simplified NP Hard Problems.

Text Books:

1. Ellis Horowitz and Sartaj Sahni, "Fundamental of Computer Algorithms", 2nd Edition, Galgotia Publication, 2001.

References:

1. Thomas H Cormen, Charles E Leiserson and Ronald L Rivest "Introduction to Algorithms",3rd Edition, MIT Press. 2009.
2. Donal E Knuth, "Fundamentals of Algorithms: The Art of Computer Programming" Vol l,3rd Edition, Pearson Educatio, 1997.
3. Goodman, S.E. &Hedetnieni,"Introduction to Design and Analysis of Algorithm", Tata McGraw Hill, 1977.
4. S. Dasgupta, C. H. Papadimitriou, and U. V. Vazirani,"Algorithms",Tata McGraw Hill, 2006.
5. J.E Hopcroft, J.D Ullman, "Design and analysis of algorithms" TMH Publication.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

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List of Practical:

1. Write a program for Iterative and Recursive Binary Search.
2. Write a program for Merge Sort.
3. Write a program for Quick Sort.
4. Write a program for Strassen's Matrix Multiplication.
5. Write a program for minimum spanning trees using Kruskal's algorithm.
6. Write a program for minimum spanning trees using Prim's algorithm.
7. Write a program for single sources shortest path algorithm.
8. Write a program for Floyd-Warshal algorithm.
9. Write a program for traveling salesman problem.
10. Write a program for Hamiltonian cycle problem

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

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BTIT301N	DCC	Computer Networks	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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Course Educational Objectives (CEOs):

The student will have ability to:

1. Understand the general overview of the concepts and fundamentals of computer networks.
2. Understand the various components required to build different networks.
3. Familiarize the students with the standard models for the layered approach to communication between machines in a network and the protocols of the various layers.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

1. Understanding basic computer network technology.
2. Understand the functions of each layer in the OSI and TCP/IP reference model.
3. Obtain the skills of subnetting and routing mechanisms
4. Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
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Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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BTIT301N	DCC	Computer Networks	60	20	20	30	20	3	0	2	4

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Syllabus:

UNIT I **9HRS**

Introduction: Importance of Computer Networks, Classifications & Types. Layered Architecture: Protocol hierarchy, Interfaces and Services, Connection Oriented &Connection less Services, ISO- OSI Reference Model, TCP/IP model overview, comparison of TCP/IP and ISO-OSI reference model.

UNIT II **9HRS**

Data Link Layer &MAC Sublayer: Need, Services Provided, Design issues, Elementary data link protocols: simplex protocol, A simplex stop and wait protocol for an error-free channel, A simplex stop and wait protocol for noisy channel. Sliding Window protocols: A one-bit sliding window protocol, A protocol using Go-Back-N, A protocol using Selective Repeat, MAC Addressing, Binary Exponential Back-off (BEB) Algorithm, Distributed Random Access Schemes/Contention Schemes: for Data Services (ALOHA and Slotted- ALOHA), CSMA, CSMA/CA, CSMA/CD.

UNIT III **9HRS**

Network Layer: Need, Services Provided, Design Issues, Routing Algorithms and types of Routing Algorithm, IPv4, IPv6, Classful and classless Addressing, Subnetting, Supernetting.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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UNIT IV **10HRS**

Transport Layer: Need, Design Issues, Multiplexing and Demultiplexing, transport layer services, UDP,UDP Header Format, Principles of reliable data transfer, TCP,Connection Management, TCP Flow Control, TCP Congestion Control, TCP Header Format, TCP Timer Management, SCTP.

UNIT V **8HRS**

Session layer: Overview, Authentication, Session layer protocols, **Presentation layer:** Overview, Data conversion, Encryption and Decryption, Presentation layer protocols (LPP, Telnet, X.25 packet Assembler/Disassembler), **Application Layer:** Domain name system, SNMP, Electronic Mail; the World WEB, HTTP, FTP.

Text Books:

1. Andrew S Tanenbaum, Computer Networks, 6th Edition, Pearson Education, 2016.

References:

1. Behrouz A.Forouzan, TCP/IP-Protocol suite, 4th edition, McGraw-Hill, 2010.
2. William Stallings, Data and Computer Communication, 10th edition Pearson, 2014.
3. Comer, Internet working with TCP/IP Volume one, Addison-Wesley, 2015.
4. W. Richard Stevens, TCP/IP Illustrated, Volume 1, 2nd Edition Addison-Wesley Professional Computing Series.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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LIST OF EXPERIEMNTS:

1. Demonstrate Different Types of Network Equipment's.
2. Color coding standard of CAT 5, 6, 7 and crimping of cable in RJ-45.
3. LAN installations and Configurations.
4. Experiment with basic Network configuration commands.
5. Write a program for error detection and correction technique.
6. Write a program for framing.
7. Write a program for routing algorithm.
8. Socket Programming.
9. Study about different network simulators.
10. Establish and simulate peer to peer network using packet tracer.
11. Simulate LAN using hub and switch and discuss pros and cons of hub.
12. Router configuration using packet tracer.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

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BTICS305N	DCC	Cyber Ethics and Social Media Analysis	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs):

The student will have ability to:

1. To understand the basics of cyber law, its related issues and ethical laws of computer for India and different countries.
2. To learn about structure and evolution of networks, to build a framework of network analysis that covers measures

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills, and attitudes.

The students will be able to

1. Understand key terms and concepts in cyber law and cybercrimes.
2. Secure both clean and corrupted systems, protecting personal data, securing simple Computer networks and safe Internet usage.
3. Understand dynamics and evolution of social networks.
4. Understand the framework of network analysis.
5. Understand how various social media networks are working and using SNA in their Infrastructure

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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BTICS305N	DCC	Cyber Ethics and Social Media Analysis	60	20	20	30	20	3	0	2	4

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Syllabus:

UNIT I
Cyber Laws: Introduction to the Legal Perspectives of Cybercrimes and Cyber security, Cybercrime, and the Legal Landscape around the World, Why Do We Need Cyber laws, The Indian IT Act, Challenges to Indian Law and Cybercrime Scenario in India, Consequences of Not Addressing the Weakness in Information Technology Act, Digital Signatures and the Indian IT Act, Cybercrime and Punishment, Cyber law, Technology and Students: Indian Scenario.

UNIT II
Cyber Ethics and Cyber -Crime Case Study: Ethics, Legal Developments, Cyber security in Society, Security in cyber laws case studies, General Law and Cyber Law-a Swift Analysis. Private ordering solutions, Regulation and Jurisdiction for global Cyber security, Copy Right source of risks, Pirates, Internet Infringement, Fair Use, Postings, and Criminal Liability.

UNIT III
Social Media and Network Analysis: Phenomenology of social media, Network Analysis Types of Networks: General Random Networks, Small World Networks, Scale-Free Networks; Examples of Information Networks; Network Centrality Measures; Strong and Weak ties. Influence and Centrality in Social Networks. Basic of Sentiment Analysis.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
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Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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UNIT IV

Social Media Behavior: Social Ties and Information Diffusion. Social Ties and Link Prediction, Social Network Analysis and online social networks -Concepts: How Services such as Facebook, LinkedIn, Twitter, Couch Surfing, etc. are using SNA to understand their users and improve their functionality.

UNIT V

Security and Privacy in Social Network: Privacy in a Networked World, Social Spam and Malicious Behavior, Sybil attack, distributed denial of service attack, Leakage and Linkage of user information and content, predicting the future with social media, Friendship paradox and
detection of contagions.

Textbooks:

1. Sunit Belapure and Nina Godbole, Cyber Security: Understanding Cyber Crimes,Computer Forensics And Legal Perspectives, Wiley India Pvt. Ltd, 2011.
2. John Scott, Social Network Analysis, 3rd Edition, SAGE, 2012.
3. Wouter de Nooy, Andrej Mrvar, Vladimir Batagelj, Exploratory Social Network Analysis with Pajek, 2nd Revised Edition, Cambridge University Press, 2011
4. Patrick Doreian, Frans Stokman, Evolution of Social Networks, Routledge, 2013.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
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References:

1. Mark F Grady, Fransesco Parisi, "The Law and Economics of Cyber Security", Cambridge University Press, 2006
2. Jonathan Rosenoer, "Cyber Law: The law of the Internet", Springer-Verlag, 1997.
3. David Easley and Jon Kleinberg, Networks, Crowds, and Markets: Reasoning About a Highly Connected World, Cambridge University Press, 2010.
4. A. Anagnostopoulos, R. Kumar, M. Mahdian, 2008 "Influence and correlation in social networks", In Proceeding of the 14th ACM SIGKDD international conference on Knowledge discovery and data mining, pp. 7-15.
5. E Bakshy, J. M. Hofman, W. A. Mason, D. J. Watts. 2011 "Everyone's an influencer: quantifying influence on Twitter" In Proceedings of Int. Conf. on Web Search and Data Mining (WSDM).

List of Practical:

1. Case study of current IT act related cases.
2. Case study of Cyber Crimes.
3. Case study of IT law related real life examples.
4. Practical analysis of Social Networking sites.
5. Practical analysis of Networks.
6. Finding out the vulnerable data on Social Networking sites.
6. Find out attacks on Social networking sites.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTICS305N	DCC	Cyber Ethics and Social Media Analysis	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

7. Practical analysis of Malwares in Social Networking sites.
8. Case study of Social Networking related crime.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE311N	DSE	Information Theory and Coding	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs):

The student will have ability to:

1. Students should be able to calculate the information content of a random variable from its probability distribution relate condition and marginal entropies of variables interims of their coupled probabilities.
2. Channel capacities and properties using Shannon's Theorems construct efficient client codes for data on imperfect communication channels generalize the discrete concepts to continuous signals on continuous channels understand.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

1. Students will be introduced to the basic notions of information and channel capacity.
2. Derive equations for entropy mutual information and channel capacity for all types of channels.
3. Design a digital communication system by selecting an appropriate error correcting codes for a particular application.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE311N	DSE	Information Theory and Coding	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Syllabus:

UNIT I **9HRS**

Introduction of Information Theory: Introduction, Measure of information, Average information content of symbols in long independent sequences, Average information content of symbols in long dependent sequences. Mark off statistical model for information source, Entropy and information rate of mark off source.

UNIT II **9HRS**

Source Coding: Encoding of the source output, Shannon‟s encoding algorithm. Communication Channels, Discrete communication channels, Continuous channels.
Fundamental Limits on Performance: Source coding theorem, Huffman coding, Discrete memory less Channels, Mutual information, Channel Capacity.

UNIT III **9HRS**

Channel: Channel coding theorem, Differential entropy and mutual information for continuous ensembles, Channel capacity Theorem Introduction.
Introduction to Error Control Coding: Types of errors, examples, Types of codes Linear Block Codes: Matrix description, Error detection and correction, Standard arrays and table look up for decoding.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE311N	DSE	Information Theory and Coding	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

UNIT IV **8HRS**

Cyclic Codes: Binary Cycle Codes, Algebraic structures of cyclic codes, Encoding using an (n-k) bit shift register, Syndrome calculation. BCH codes. RS codes, Golay codes, Shortened cyclic codes, Burst error correcting codes. Burst and Random Error correcting codes.

UNIT V **7HRS**

Convolution Codes: Convolution Codes, Time domain approach. Transform domain approach.

Text Books:

1. Information Theory, Coding and Cryptography, Ranjan Bose, TMH, III edition, 2017

References:

1. Digital Communications Glover and Grant, Pearson Ed. 2nd Ed 2008.
2. Information Theory and Coding, K. N. Hari Bhat, D. Ganesh Rao, Cengage, 2017.
3. Digital and analog communication systems, K. Sam Shanmugam, Wiley,1996.
4. Digital communication, Simon Haykin, Wiley, 2003.

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Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE312N	DSE	Essentials of E - Commerce	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs):

The student will have ability to:

1. Understanding the fundamental concepts of E-Commerce.
2. Understand structured E-Payment Systems.
3. Understand e-Readiness & Ecommerce Security.
4. Knowledge of basic Security of E-Commerce.
5. Understand E-Governance& Models.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to:

1. Students will understand basics E-Commerce & E-Governance.
2. Students would be able to analyze the concept of electronic market and market place
3. Students will understand e-Readiness&Ecommerce Security.
4. Understand the e-business concepts, models and infrastructure.
5. Willcome up with online business ideas and will be motivated to apply what they learned
6. Students would be able to understand the legal and security issues.
7. Learn how e-business concepts are applied to different fields, such as: education, banking, tourism etc.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE312N	DSE	Essentials of E - Commerce	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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Syllabus:

UNIT I **10HRS**

Introduction To E-Commerce: The Scope of E-Commerce, Commercial Use Of The Internet, Emergence of World Wide Web, Electronic Data Exchange-Business, E-Commerce In India, E-Commerce Opportunities For Industries, B2C,B2B,C2C,C2B Models, Advantages and Disadvantages of E-Commerce.

UNIT II **9HRS**

Electronic Payments Overview of Electronics payments, Overview, The SET protocol, Payment Gateway, Digital Token based Electronics payment System, magnetic strip card, E-Checks, Smart Cards, Credit Card, Debit Card based EPS, Emerging financial Instruments, Home Banking, Online Banking.

UNIT III **8HRS**

E-readiness, e-government readiness, e-Framework, step & issues, application of data warehousing and data mining in e-government, e-Advertising Techniques: Banners, Sponsorships, Portals, Online Coupons, Case studies: NICNET-role of nationwide networking in e-governance, E-seva

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Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE312N	DSE	Essentials of E - Commerce	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

UNIT IV **7HRS**

E-Commerce Security: Security on the internet, E-commerce security issues, Cryptography, Digital Signature & Authentication protocol, Digital Certificates. Online Security Challenges and approach to e-government security, security for server computers, communication channel security, security for client computers. Information security environment in India.

UNIT V **8HRS**

E-Government, theoretical background of e-governance, issues in e-governance applications, evolution of e-governance, its scope and content, benefits and reasons for the introduction of e-governance, e-governance models- broadcasting, critical flow, comparative analysis, mobilization and lobbying, interactive services / G2C2G.

Text Books:

2. V. Rajaraman, “Essentials of E-Commerce Technology”, PHI Learning Private Limited
3. C.S.R. Prabhu, “E-governence: concept and case study”, PHI Learning Private Limited.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
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			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE312N	DSE	Essentials of E - Commerce	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

References:.

1. Gary P. Schneider, “E-commerce”, Cengage Learning India. 9th Edition
2. Hanson and Kalyanam, “E-Commerce and Web Marketing”, Cengage Learning.
3. P.T. Joseph, “E-Commerce An Indian Perspective”, PHI Learning Private Limited.
4. J. Satyanarayan, “E-government: The science of the possible”, PHI Learning Private Limited.
5. David Whiteley, “E-commerce study, technology and applications”, TMH.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE313N	DSE	Modern Computing Hardware	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Course Educational Objectives (CEOs):

1. To learn the concept of memory and its types along with HDD/SDD.
2. To learn the input/output components presents on the motherboard.
3. To learn different modes of power supply to the PC and it's troubleshooting.
4. To learn the concept of BIOS.
5. To learn the device drivers and peripherals attached to the PC board.

Course Outcomes (COs):

Upon completion of the course, students will be able:

1. To understand the hierarchy of the Memory used for PC and its applications.
2. To understand the use and working of I/O components.
3. To understand the principles behind the power supply and its usage.
4. To understand the BIOS concept and its configuration.
5. To understand the use and requirement of peripherals and their device drivers.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE313N	DSE	Modern Computing Hardware	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Syllabus:

UNIT I **8 HRS**

Hardware Organization : Motherboards, Chipset and Controllers, Types of processors (Intel Core i3/ i5 /i7 /i9 & AMD) and their compatibility with motherboards, USB Ports, HDMI, DVI, Interconnection between units, Graphic cards**.**

UNIT II **6HRS**

Memory& Storage Devices: Introduction to memory, classification of Memory and its use, Overview Memory chips and Modules, and its working principle and Trouble shooting of Memory. DVD & Blue-Ray Disk, Hard Disk Drives, Solid-State Drives, USB Flash Drives.

UNIT III **4 HRS**

Power Supply: Working of SMPS, On-Line/Off-Line/Line-Interactive/uninterrupted power supplies (UPS), CMOS, Lithium-ion battery, basic principle of working their importance and maintenance.

UNIT IV **4 HRS**

Basic Input/output System: Concept of BIOS. Function of BIOS, software interrupts, testing and initialization, configuring the system.

UNIT V **6 HRS**

Peripherals & Device Drivers: Input devices: Wireless Keyboard & Mouse, Light-Pen, Touch Screen, HD web camera, Barcode Reader, Output devices: Touch Screen Monitor, 3D Printer, Projector,

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTDSE313N	DSE	Modern Computing Hardware	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Software drivers for various devices and their role**.**

Text Books:

1. Craig Zacker & John Rourtre, PC Hardware- The complete reference, First Edition, TMH, 2017
2. Mike Meyers, Introduction to PC Hardware and Troubleshooting, 1st edition, McGraw Hill Education, 2017

References:

1. Stephen Bigelow, Bigelow's Troubleshooting, Maintaining & Repairing PCs, 5 edition, McGraw Hill Education, 2017
2. Vikas Gupta, Comdex Hardware and Networking Course Kit: Revised & Upgraded, Dreamtech Press, 2014
3. Dan Gookin, Troubleshooting and Maintaining Your PC All–in–One For Dummies, 3rd edition, John Wiley & Sons, 2017
4. Robert Bruce Thompson, Barbara Fritchman Thompson, Building the Perfect PC, 3 edition, O′Reilly, 2010
5. B. Govindarajalu, IBM PC and CLONES: Hardware, Troubleshooting and Maintenance McGraw Hill Education, 2nd Edition 2002.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTIT307N	SEC	Introduction to Core Java	0	0	0	30	20	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks`

Course Educational Objectives (CEOs):

The student will have ability to:

1. Understand Java Environment for application development.
2. Understand Programing using Object Oriented Technology.
3. Develop computer program to solve specific problems with high performance.
4. Create debug and run java standalone applications.
5. Understand the concept of Exception handling and Multithreading.

Course Outcomes (COs):

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The students will be able to

8. Design new applications using object oriented methodologies.
9. Explore various system libraries.
10. Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
11. Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.
12. Design Data base connectivity program for simple problems.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTIT307N	SEC	Introduction to Core Java	0	0	0	30	20	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks`

Syllabus:

UNIT I **12HRS**

Introduction to Java: Java's magic, The Byte code, Java Development Kit (JDK), Java Buzzwords, Object oriented programming, Simple Java programs, Data types, variables and arrays, Operators, Control Statements.

UNIT II 8**HRS**

Classes, Inheritance, Packages, and Interfaces: Classes: Classes fundamentals, Declaring objects, Constructors, this keyword, garbage collection. Inheritance: inheritance basics, using super, creating multi-level hierarchy, method overriding. Packages, Access Protection, Importing Packages, Interfaces.

UNIT III **7HRS**

Exceptions handling and Multi-threading: Exception , Exceptions and Errors ,Types of Exception, Control Flow in Exceptions, Use of Try, Catch, Finally, Throw, Throws in Exception Handling, In-Built and User Defined Exceptions, Checked and Un Checked Exceptions.

UNIT IV **8HRS**

Understanding Threads, Needs of Multi-Threaded Programming, Thread Life Cycle, Thread Priorities, Synchronizing Threads.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
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			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTIT307N	SEC	Introduction to Core Java	0	0	0	30	20	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks`

UNIT V **8HRS**

The Java Library: String Handling, Exploring Java.Lang, Java.Util – The Collection Framework, Exploring Java.IO.

Text Books:

1. E. Balagurusamy, “Programming with java A Primer”, Fourth Edition, Tata McGraw Hill, 2009

References:

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI.
2. Introduction to Java programming, By Y.DanielLiang,Pearson Publication.
3. SouravSahay, Object Oriented Programming with C++ , Oxford University Press,2006
4. Herbert Schildt, “The Complete Reference Java”, Ninth Edition, McGraw Hill, 2014
5. Bert Bates, Kathy Sierra, “Head First Java”, 2nd Edition, O’ Reilly, 2005

List of Practical:

1. Write a program to show concept of Class in Java?
2. Write a program showing Type Casting
3. Write a program showing Different type of inheritance
4. Write a program showing Different types of Polymorphism
5. Write a program showing Encapsulation
6. Write a program showing Abstraction
7. Write a program showing interface.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
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BTIT307N	SEC	Introduction to Core Java	0	0	0	30	20	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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8. Write a program showing abstract class.
9. Write a program showing inner class.
10. Write a Multithreaded program
11. Write a program showing Checked and Unchecked Exception .

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTIT408N	SEC	Unix Programming Lab	0	0	0	0	50	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks`

Course Educational Objectives (CEO's:
The student will have ability to:

1. Provide introduction to UNIX Operating System and its File System.
2. Gain an understanding of important aspects related to the SHELL and the process
3. Develop the ability to formulate regular expressions and use them for pattern matching.
4. Provide a comprehensive introduction to SHELL programming, services, and utilities.
5. Develop the ability to perform different networking tasks.

Course Outcomes (CO's):
The students will be able to:

1. Describe the architecture and features of UNIX Operating System.
2. Distinguish UNIX Operating System from other Operating Systems.
3. Demonstrate UNIX commands for file handling and process control.
4. Show the working of vi editor in all its modes using various commands.
5. Write Regular expressions for pattern matching and apply them to various filters for a specific task.
6. Analyze a given problem and apply requisite facets of SHELL programming in order to devise a SHELL script to solve the problem.
7. Diagnose network using different networking utilities of UNIX.

Shri Vaishnav Vidyapeeth Vishwavidyalaya,Indore
Shri Vaishnav Institute of Information Technology
Choice Based Credit System (CBCS) in Light of NEP-2020
Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BTIT408N	SEC	Unix Programming Lab	0	0	0	0	50	0	0	2	1

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Syllabus:

UNIT I: **10HRS**

Introduction to UNIX - The UNIX Operating System, The UNIX Architecture, Features of UNIX, Internal and External Commands, Command Structure.

General purpose utilities: cal, date, echo, printf, bc, script, passwd, path, who, uname, tty, pwd, cd, mkdir, rmdir.

UNIT II: **9 HRS**

Handling Files - The File System,touch, cat, cp, rm, mv, more, file, ls, wc, pg, comm, gzip, tar, zip, df, du, The vi editor.

Security by file Permissions: chmod, umask .

Networking commands: ping, telnet, ftp, finger, arp, rlogin.

UNIT III: **8 HRS**

Shell Basics - Types of shells, Shell Functionality, Work Environment, writing script & executing basic script, debugging script, Making interactive scripts, Variables (default variables), Mathematical expressions. Conditional statements: If-else-elif, Test command, Logical operators - AND, OR, NOT, Case –esac. Loops: While, For, Until Break & continue.

Chairperson **Board of Studies** **ShriVaishnavVidyapeeth Vishwavidyalaya, Indore**	**Chairperson** **Faculty of Studies** **ShriVaishnavVidyapeeth Vishwavidyalaya, Indore**	**Controller of Examination** **ShriVaishnavVidyapeeth Vishwavidyalaya, Indore**	**Joint Registrar** **ShriVaishnavVidyapeeth Vishwavidyalaya, Indore**

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Shri Vaishnav Institute of Information Technology
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Bachelor of Technology(CSE with Specialization in Information and Cyber Security)
Choice Based Credit System (CBCS)-2021-25
SEMESTER-III

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
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UNIT IV: **7HRS**

Command Line Arguments & Regular Expression - Command line arguments: Positional parameters, Set & shift, IFS. Functions & file manipulations: Processing file line by line, Functions. Regular Expression & Filters: Regular expression, grep, cut, paste, sort , head , tail , nl , pipe ,tr, tree , meta characters.

UNIT V: 8**HRS**

SED and AWK - SED: Scripts, Operation, Addresses, commands, Applications.
AWK: Execution, Fields and Records, Scripts, Operations, Patterns, Actions, Associative Arrays, String Functions, String Functions, Mathematical Functions, User – Defined Functions, Using System commands in awk, Applications awk.

TEXTBOOKS:

1. Sumitabha Das: "YOUR UNIX – The Ultimate Guide", Tata McGraw Hill.

REFERENCES:

1. Behrouz A. Forouzan, Richard F. Gilbery, "Unix and Shell Programming",Cengage Learning India.
2. Graham Glass, King Ables, "Unix for programmers and users", Pearson Education.
3. N.B. Venkateswarlu, "Advanced Unix programming", B S Publications.
4. Yashavant Kanetkar, "Unix Shell programming", 1st Edition, BPB Publisher.

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5. Stephen Prata "Advanced UNIX: A Programming's Guide", BPB Publications.
6. Maurice J. Bach "Design of UNIX O.S. ", PHI Learning.
7. Brian W. Kernighan & Robe Pike, "The UNIX Programming Environment", PHI Learning.

LIST OF EXPERIMENTS:

1. Perform installation of UNIX/LINUX operating system.
2. Study of UNIX general purpose utility commands.
3. Execution of various file/directory handling commands.
4. Working with the vi editor: Creating and editing a text file with the vi text editor using the standard vi editor commands.
5. Write a shell script for calculator (to perform basic arithmetic and logical calculations).
6. Write a shell script that will take an input file and remove identical lines (or duplicate lines from the file).
7. Shell scripts to explore system variables such as PATH, HOME etc.
8. Execution of various system administrative commands.
9. Write awk script that uses all its features.
10. Write a shell script to display list of users currently logged in.
11. Write a shell script to delete all the temporary files.
12. Write shell script to perform different string operations of arrays.