

**Institute of Computer Science  
Vikram University, Ujjain (MP)**

**SCHEME OF**

**B.SC. (HONS.) COMPUTER SCIENCE**

(Under the Faculty of Engineering Science)

**FOUR YEARS (8 SEMESTERS) CBCS**

**(FOR UTD)**

(UNDER NEW EDUCATION POLICY-2021-22)

**CHOICE BASED CREDIT SYSTEM (CBCS)**

**2021-2022 ONWARDS**

**Institute of Computer Science**  
**Vikram University Ujjain**  
**B.Sc. (Hon's)-Computer Science**

**Programme Objectives:**

The objective of the B.Sc.(H) CS programme is to prepare graduate students for productive careers in the software industry and academia by providing an outstanding environment for teaching and research in the core and emerging areas of the discipline.

This Bachelor Degree Program has been designed with a semester approach in mind. The first year courses are aimed at skills development in computers using various technologies, the second year, provides the specialization and the project work.

The main objectives of the B.Sc.(H) CS programme includes:

- Learn various programming languages to solve real world problems from diversified python and Machine learning domain.
- To develop in depth understanding of the key concepts of computer science and to impart knowledge of problem solving techniques, database management, software engineering and Web Technology.
- Develop problem solving skills in interdisciplinary domains.
- Focus on development of advanced knowledge and specific skills required for IT industry working in the domain of AI.
- To make sustained efforts for holistic development of the students and empower them to analyze, develop, configure IT solutions keeping in view the challenges posed by changing industrial requirements.
- To develop competent computer professionals with strong ethical values.

**PROGRAMME OUTCOMES (POs)**

At the end of this programme, B.Sc.(H) CS student will be able to:

- Explore software, hardware, application systems and their interplay in Machine learning systems.
- Employ tools and technologies to implement Machine learning applications.
- Acquire experimental learning of algorithms and tools required for capturing, storing, managing and analyzing new language.
- Gain understanding of the key technologies Machine learning, Computer Organization, Computer Architecture, Data Communication, Web Technology, Cloud Computing, Soft computing, Artificial Intelligence and Advance Data Structures.
- Understanding the key concepts of Information Technology to improvise organizational performance.

After Completion of the programme students are able to work as-

- Language Programmer
- -Software Developer
- -Web Application Developer

**VIKRAM UNIVERSITY, UJJAIN MP**  
(Session -2021-2022 onwards)

**B.Sc. (Hon's) Computer Science FOUR YEARS (EIGHT SEMESTERS), CBCS SCHEME (NEP)**

S.No.	Paper code	Course Component and Name of Course	Credits			Marks		Total
			T	P	Total	Max Marks CCE Internals	Max Marks Theory Externals	
1.	BSCH 101 Major-1	Programming in C	2	0	2	30	45	100
	BSCH P	Programming in C	0	1	1	10	15	
2.	BSCH 102 Major-2	Operating System	3	0	3	40	60	100
3.	BSCH 103 Minor-1	Introduction to Information Technology	3	0	3	40	60	100
4.	BSCH-104 Generic Elective	Discrete Mathematical Structure	3	0	3	40	60	100
5.	BSCH-105 Ability Enhancement Course	Hindi	2	0	2	20	30	100
		English	2	0	2	20	30	
6.	BSCH-106 Vocational/Skill Enhancement-Course from any faculty/Mooc Course	Web Designing	4	0	4	40	60	100
Total Credits and marks					20			600

<b>PART A: Introduction</b>			
Program: Certificate	Class: I SEM	Year: I Year	Session: 2021-22
<b>Subject: Computer Science</b>			
1.	Course Code	BSCH 101	
2.	Course Title	<b>Programming in C</b>	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational)	<b>Core course</b>	
4.	Pre-Requisite (if any)	Basic fundamentals of computer	
5.	Course Learning Outcomes(CLO)	<ul style="list-style-type: none"> <li>• Identify situations where computational methods and computers would be useful.</li> <li>• Given a computational problem, identify and abstract the programming task involved.</li> <li>• Approach the programming tasks using techniques learned and write pseudo-code.</li> <li>• Choose the right data representation formats based on the requirements of the problem.</li> <li>• Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.</li> </ul>	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 75	Min. Passing Marks:

<b>PART B: Content of the Course</b>		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	Problem identification, analysis, design, coding, testing & debugging, implementation, modification & maintenance, algorithms & flowcharts, Characteristics of a good program – accuracy, simplicity, robustness, portability, minimum resource & time requirement, modularization; Rules/conventions of coding, documentation, naming variables; Top down design; Bottom-up design.	12
II	History of C, Structure of a C program, Data types, Constant & Variable, Operators & expressions, Control Constructs – if-else, for, while, do-while, Case statement, Arrays, Formatted & unformatted I/O, Type modifiers & Storage classes, Ternary operator, Type conversion & type casting, Priority & associativity of operators.	12

III	Functions, Arguments, return value, Parameter passing – call by value, call by reference, return statement, Scope, visibility and life time rules for various types of variable, static variable, calling a function, Recursion – basics, comparison with iteration, tail recursion, when to avoid recursion examples.	12
IV	Special constructs – break, continue, exit(), goto& labels; Pointers - &and * operators, pointer expression, pointer arithmetic, dynamic memory management functions like malloc(), calloc(), free(), String, Pointer to function, Function to parameter, Structure – basic, declaration, membership operator, pointer to structure, referential operator, self-referential structures, structure within structure, array in structure, array of structures, Union – basic, declaration; Enumerated data type, Typedef, Command line arguments.	12
V	File handling and related functions: printf&scanf family, C preprocessor – basics, # Include, # define, # undef, conditional compilation directive like #if, #else, #endif, #ifdef and #ifndef, Variable argument list functions.	12

<b>PART C: Learning Resources</b>	
Textbooks, Reference Books, Other Resources	
<b>Suggested Readings:</b>	
<ol style="list-style-type: none"> <li>1. Kerninghan&amp; Richie: The C Programming language, PHI</li> <li>2. Cooper Mullish: The Spirit of C, Jaico Publishing House, Delhi</li> <li>3. Kanetkar Y: Let us C</li> <li>4. Kanetkar Y: Pointers in C.</li> </ol>	
<b>Suggestive digital platform web links:</b>	
<a href="https://beginnersbook.com/2014/01/c-pointers/">https://beginnersbook.com/2014/01/c-pointers/</a> <a href="https://www.programiz.com/c-programming/c-if-else-statement">https://www.programiz.com/c-programming/c-if-else-statement</a> <a href="https://javatutoring.com/control-statements-in-c/">https://javatutoring.com/control-statements-in-c/</a> <a href="https://www.programiz.com/c-programming/c-arrays">https://www.programiz.com/c-programming/c-arrays</a> <a href="https://tutorialspoint.com/cprogramming/c_structures.htm">https://tutorialspoint.com/cprogramming/c_structures.htm</a> <a href="https://beginnersbook.com/2014/01/c-functions-examples/">https://beginnersbook.com/2014/01/c-functions-examples/</a> <a href="https://www.javapoint.com/data-types-in-c">https://www.javapoint.com/data-types-in-c</a>	

<b>Part D: Assessment and Evaluation</b>		
<b>Suggested Continuous Evaluation Methods:</b>		
Maximum Marks:		<b>75</b>
Continuous Comprehensive Evaluation (CCE):		<b>30 Marks</b>
University Exam (UE):		<b>45 Marks</b>
<b>Internal Assessment:</b>	Class Test	15
Continuous Comprehensive Evaluation (CCE)	Assignment/Presentation	15
		<b>Total Marks: 30</b>
<b>External Assessment:</b>	Section (A): Short Answer type questions	$03 \times 05 = 15$
University Exam (UE)	Section (B): Long Answer Type Questions	$06 \times 05 = 30$
Time: 02.00 Hours		<b>Total Marks: 45</b>

<b>PART A: Introduction</b>			
Program: Certificate		Class: I SEM	Year: I Year
Session: 2021-22			
<b>Subject: Computer Science</b>			
1.	Course Code	BSCH 101 P	
1.	Course Title	<b>Programming in C</b>	
2.	Course Type (Core Course/Elective/Generic Elective/ Vocational)	<b>Core Course</b>	
3.	Pre-Requisite (if any)	To study this course, a student must have basic logical and analytical skills.	
4.	Course Learning Outcomes(CLO)	<p><b>After the completion of this course, a successful student will be able to do the following:</b></p> <ol style="list-style-type: none"> <li>1. Develop simple algorithms and flow charts to solve a problem with programming using top down design principles.</li> <li>2. Writing efficient and well-structured computer algorithms/programs.</li> <li>3. Learn to formulate iterative solutions and array processing algorithms for problems.</li> </ol>	
5.	Credit Value	<b>Practical – 1 Credits</b>	
6.	Total Marks	Max. Marks : <b>10+15</b>	Min. Passing Marks: <b>10</b>
<b>PART B: Content of the Course</b>			
No. of Lab Practicals (in hours per week): <b>2 hours per week</b>			
Total No. of Lab.: <b>60 Hrs.</b>			
	<b>Suggestive list of Practicals</b>		<b>No. of Labs.</b>
	<p><b>Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code in C, execute and test it. Students should be given assignments on following :</b></p> <ol style="list-style-type: none"> <li>1. Write a program to input N numbers and find their average.</li> <li>2. Write a program to calculate area and circumference of circle for given radius.</li> <li>3. Write a program to convert the temperature from Fahrenheit to Celsius.</li> <li>4. Write a program to swap the contents of two variables with the help of third variable.</li> <li>5. Write a program to swap the contents of two variables without third variable.</li> <li>6. Write a program to find area of a circle, rectangle, square using switch case.</li> <li>7. Write a program to print table of any number.</li> <li>8. Write a program to print Fibonacci series.</li> <li>9. Write a program to find factorial of a given number.</li> </ol>		60

	<p>10. Write a program to check given string is palindrome or not.</p> <p>11. Write a program to print digits of entered number in reverse order.</p> <p>12. Write a program to print sum of two matrices.</p> <p>13. Write a program to print multiplication of two matrices.</p> <p>14. Write a program to generate even/odd series from 1 to 100.</p> <p>15. Write a program whether a given number is prime or not.</p> <p>16. Write a program for call by value and call by reference.</p> <p>17. Write a program to create a pyramid structure</p> <pre> 1 12 123 1234 </pre> <p>18. Write a program to check entered number is Armstrong or not.</p> <p>19. Write a program to find the area and volume of a rectangular box using constructor.</p> <p>20. Write a program to design a class time with hours, minutes and seconds as data members. Use a data function to perform the addition of two time objects in hours, minutes and seconds.</p>	
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**PART C: Learning Resources**

Textbooks, Reference Books, Other Resources

**Suggested Readings**

**Reference Books:**

1. Kerninghan & Richie: The C Programming language, PHI
2. Cooper Mullish: The Spirit of C, Jaico Publishing House, Delhi
3. Kanetkar Y: Let us C
4. Kanetkar Y: Pointers in C.
5. Programming in ANSI-C: E Balagurusami, TMH.

**Suggestive digital platform web links**

- <https://beginnersbook.com/2014/01/c-pointers/>
- <https://www.programiz.com/c-programming/c-if-else-statement>
- <https://javatutoring.com/control-statements-in-c/>
- <https://www.programiz.com/c-programming/c-arrays>
- [https://tutorialspoint.com/cprogramming/c\\_structures.htm](https://tutorialspoint.com/cprogramming/c_structures.htm)
- <https://beginnersbook.com/2014/01/c-functions-examples/>
- <https://www.javapoint.com/data-types-in-c>

**Suggested equivalent online courses**



<b>PART D: Assessment and Evaluation</b>			
<b>Internal Assessment</b> : Continuous Comprehensive Evaluation (CCE) : <b>10Marks</b>		<b>External Assessment:</b> University Exam (UE) : <b>15 Marks</b> Time : <b>02.00 Hours</b>	
<b>Internal Assessment</b>	<b>Marks</b>	<b>External Assessment</b>	<b>Marks</b>
Hands-on Lab Practice	2 Marks	Practical record file	5 Marks
Viva	3 Marks	Viva voce practical	5 Marks
Lab Test from practical list	2 Marks	Table works/ Exercise Assigned (02) in practical exam	2 Marks
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training	3 Marks	Reports of excursion/ Lab visits/ Industrial training/ Survey/ Collection/ Models	3 Marks
<b>Total</b> <i>Excursion/ Lab visits/ Industrial Training is compulsory</i>	<b>10 Marks</b>	<b>Total</b>	<b>15 Marks</b>

<b>PART A: Introduction</b>			
Program: Certificate		Class: I SEM	Year: I Year
Session: 2021-22			
<b>Subject: Computer Science</b>			
1.	Course Code	BSCH 102	
2.	Course Title	<b>Operating Systems</b>	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational)	<b>Core Course</b>	
4.	Pre-Requisite (if any)	Students must have the basic knowledge of Computer basics.	
5.	Course Learning Outcomes(CLO)	<p>Upon successful completion of this course, students will be able to:</p> <ul style="list-style-type: none"> <li>• Identify and describe the Services Provided by Operating Systems.</li> <li>• Understand and Solve Problems Involving Process Control, Mutual Exclusion, Synchronization and Deadlock.</li> <li>• Apply Various Approaches of Memory Management Techniques</li> <li>• Understand the Structure and Organization of the File System.</li> <li>• Implement Processor Scheduling, Synchronization and Disk Allocation Algorithms for a Given Scenario.</li> </ul>	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40

<b>PART B: Content of the Course</b>		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	<b>Introduction to Operating Systems:</b> Operating system services, multiprogramming, time-sharing system, storage structures, system calls, multiprocessor system. Basic concepts of CPU scheduling, Scheduling criteria, Scheduling algorithms, algorithm evaluation, multiple processor scheduling, real time scheduling, I/O devices organization, I/O devices organization, I/O devices organization, I/O buffering.	12
II	<b>Process concept:</b> process scheduling, operations on processes, threads, inter-process communication, precedence graphs, critical section problem, semaphores, problems of synchronization, Deadlock problem: deadlock characterization, deadlock prevention. deadlock avoidance, deadlock detection, recovery from deadlock, Methods for deadlock handling.	12
III	<b>Concepts of memory management:</b> logical and physical address space, swapping, contiguous and Non- contiguous allocation, paging, segmentation, and paging combined with segmentation.	12
IV	Concepts of virtual memory, demand paging, page replacement algorithms. allocation of frames, thrashing, demand segmentation, Security threads protection, Intruders- Viruses-trusted system,	12
V	Disk scheduling, file concepts, file access methods, allocation methods, directory systems, file protection, introduction to distributed systems and parallel processing case study.	12

<b>PART C: Learning Resources</b>	
Textbooks, Reference Books, Other Resources	
<b>Suggested Reading:</b>	
<ol style="list-style-type: none"> <li>1. Operating System by Silberschatz.</li> <li>2. Operating System by Deitel</li> <li>3. Modern operating system by Tannebacem.</li> <li>4. Donovan, J.J. : System programming, Mcgraw Hill,1972</li> </ol>	

<p><b>Suggestive digital platform web links:</b></p> <p><a href="https://web.iitd.ac.in/~minati/MTL458.html">https://web.iitd.ac.in/~minati/MTL458.html</a>  <a href="https://www.cse.iitb.ac.in/~mythili/os/">https://www.cse.iitb.ac.in/~mythili/os/</a>  <a href="https://www.youtube.com/watch?v=aCJ3YgoolHQ">https://www.youtube.com/watch?v=aCJ3YgoolHQ</a></p>
<p><b>Suggested equivalent online courses:</b></p> <p><a href="https://nptel.ac.in/courses/106/102/106102132/">https://nptel.ac.in/courses/106/102/106102132/</a></p>

<b>Part D: Assessment and Evaluation</b>		
<b>Suggested Continuous Evaluation Methods:</b>		
Maximum Marks:		<b>100</b>
Continuous Comprehensive Evaluation (CCE):		<b>40</b> Marks
University Exam (UE):		<b>60</b> Marks
<b>Internal Assessment:</b>	Class Test	20
Continuous Comprehensive Evaluation (CCE)	Assignment/Presentation	20
		<b>Total Marks: 40</b>
<b>External Assessment:</b>	Section (A): Short Answer type questions	$04 \times 05 = 20$
University Exam (UE)	Section (B): Long Answer Type Questions	$08 \times 05 = 40$
Time: 03.00 Hours		<b>Total Marks: 60</b>

<b>PART A: Introduction</b>			
Program: Certificate	Class: I SEM	Year: I Year	Session: 2021-22
<b>Subject: Computer Science</b>			
1.	Course Code	BSCH 103	
2.	Course Title	<b>Introduction to Information Technology</b>	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational)	<b>Minor Core</b>	
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Computer.	
5.	Course Learning Outcomes(CLO)	<ul style="list-style-type: none"> <li>• <b>Understand the Fundamental of Computer</b></li> <li>• <b>Understand the concept of Object Oriented Programming</b></li> <li>• <b>Understand the concept of Operating System</b></li> <li>• <b>Understand the concept of Data Base Management System</b></li> <li>• <b>Understand the concept of Data Communication and Computer Network</b></li> </ul>	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40

<b>PART B: Content of the Course</b>		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	<b>Computer Fundamental:</b> Characteristics of Computers, History of Computer, Evolution of Computers, Computer Generations, Types of Computer, Components of a Computer: Registers, Instruction Set, Bus Architecture, Computer Hardware: Input Devices, Output Devices, Storage Devices: Primary Storage capacity, Memory Types, Memory Measuring Units, Secondary Storage Device	12
II	<b>Software and Computer Applications:</b> Software & Software Types, Computer Languages, Compiler, Interpreter, Editor, Computer Ethics, Computer applications, Introduction of Programming: Procedure Oriented Programming, Object oriented programming, Concepts used in OOP, Benefits of OOP, Main advantages and disadvantage of OOP, Applications of OOP, OOP vs. POP.	12

III	<b>Operating System Overview:</b> Computer System Startup, Computer System Structure, Computer System Components, Operating System Classifications, Operating System Services, Major Functions of Operating system, Process Management, CPU Scheduling, Scheduling Criteria. Memory and File Management: Memory Management Requirements, Swapping, Memory Management Techniques, Virtual Memory, File Management, File Access Methods, Protection.	12
IV	<b>Introduction to DBMS:</b> File System, Traditional File Oriented Approach, DBMS- Advantages and Disadvantages, Role of DBMS, Three views of data, DBMS Architecture, Data Models, Data Independence, Major components of DBMS, Data Dictionary, Types of Users, DBMS applications, Keys in Databases, Database Languages.	12
V	<b>Introduction to Computer Networks:</b> Computer Network Definition, Importance of Networking, Types of Networks, Network Topology, Advantages and Disadvantage of Computer Networks, Applications of computer networks, Reference Model, Internet, Introduction to Internet Technology, Electronic Mail, World Wide Web.	12

<b>PART C: Learning Resources</b>	
Textbooks, Reference Books, Other Resources	
<b>Suggested Readings:</b>	
<ol style="list-style-type: none"> <li>1. Operating Systems Concepts, A. Silberschatz, P.GaIvin, G.Gagne, John Wiley &amp; Sons</li> <li>2. Object Oriented Programming in C++, Robert Lafore, Galgotia Publication.</li> <li>3. Data base management systems vol. 1., Date C.J.</li> <li>4. Fundamental of Computer Science &amp; IT, Singh Umesh Kumar, Jain S., Maheshwari A., SSDN Publications New Delhi,</li> <li>5. Data Communications and Networks, Godbole A, Tata McGraw-Hill Publications.</li> </ol>	
<b>Suggestive digital platform web links:</b>	
<a href="https://edu.gcfglobal.org/en/computerbasics/">https://edu.gcfglobal.org/en/computerbasics/</a> <a href="https://edu.gcfglobal.org/en/subjects/office/">https://edu.gcfglobal.org/en/subjects/office/</a> <a href="https://vikaspedia.in/education/digital-literacy/it-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals">https://vikaspedia.in/education/digital-literacy/it-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals</a> <a href="https://www.tutorialspoint.com/computer_fundamentals/index.htm">https://www.tutorialspoint.com/computer_fundamentals/index.htm</a> <a href="https://nptel.ac.in/courses/106/106/106106092">https://nptel.ac.in/courses/106/106/106106092</a>	

<b>Part D: Assessment and Evaluation</b>		
<b>Suggested Continuous Evaluation Methods:</b>		
Maximum Marks: <b>100</b>		
Continuous Comprehensive Evaluation (CCE): <b>40</b> Marks		
University Exam (UE): <b>60</b> Marks		
<b>Internal Assessment:</b>	Class Test	20
Continuous Comprehensive Evaluation (CCE)	Assignment/Presentation	20
		<b>Total Marks: 40</b>
<b>External Assessment:</b>	Section (A): Short Answer type questions	$04 \times 05 = 20$
University Exam (UE)	Section (B): Long Answer Type Questions	$08 \times 05 = 40$
Time: 03.00 Hours		<b>Total Marks: 60</b>

<b>PART A: Introduction</b>			
Program: Certificate	Class: I SEM	Year: I Year	Session: 2021-22
<b>Subject:</b> Computer Science			
1.	Course Code	BSCH 104	
2.	Course Title	<b>Discrete Mathematical Structure</b>	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational)	<b>Generic Elective</b>	
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Maths.	
5.	Course Learning Outcomes(CLO)	<ul style="list-style-type: none"> <li>• Students will learn the basic concepts of sets, permutations, relations, graphs, trees.</li> <li>• Students will represent discrete objects and relationships using abstract mathematical structures.</li> <li>• Apply the Operations of Sets and use Venn Diagrams to Solve Applied Problems;</li> <li>• Understand, Explain and Apply the Basic Principles of Sets and Operations in Sets to Solve the Problems</li> <li>• Analyze Modern Problems in Computer Science and solve them Using Graphs and Trees.</li> </ul>	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40

<b>PART B: Content of the Course</b>		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	Set Theory: Introduction, Sets and Elements, Universal Set and Empty Set, Subsets, Venn Diagrams. Relations: Introduction, Product Sets, Relations, Pictorial Representation of Relations, Composition of Relations, Types of Relations, Partial Ordering Relations.	12
II	Functions: Introduction, One-to-One, Onto, and Invertible Functions, Cardinality. Logic and Propositional Calculus: Introduction, Propositions and Compound Propositions, Basic Logical Operations, Propositions and Truth Tables, Tautologies and Contradictions.	12
III	Counting: Introduction, Basic Counting Principles, Factorial Notation, Binomial Coefficients, Permutations and Combinations. Pigeon hole Principle.	12



IV	Graph Theory: Introduction, Graphs and Multigraphs, Subgraphs, Paths, Connectivity, Weighted Graphs, Complete, Regular and Bipartite Graphs. Directed Graphs: Introduction, Rooted Trees, Graph Algorithms: Depth first and Breadth-First Searches.	12
V	TREES AND CUT - SETS : Paths and Circuits, Shortest Paths, Eulerian Paths and Circuits, Hamiltonian Paths and Circuits. Rooted Trees, Path Lengths in Rooted Trees, Binary Search Trees. Spanning Trees, Minimum Spanning Trees.	12

### PART C: Learning Resources

Textbooks, Reference Books, Other Resources

#### Suggested Readings:

1. Elements of Discrete Mathematics, C.L.Liu, Second Edition, TMH
2. Discrete Mathematics and its applications, Kenneth H. Rosen, (Fifth Edition), Tata McGraw Hill Publishing Company.
3. Theory and Problems of Discrete Mathematics, Semmour Lipschutz, Marc Lipson, Second Edition, Schaum's Outline, T.M.H.

#### Suggestive digital platform web links:

<https://www.mbacrystalball.com/blog/2015/10/09/set-theory-tutorial/>  
<https://plato.stanford.edu/entries/set-theory/basic-set-theory.html>

### Part D: Assessment and Evaluation

#### Suggested Continuous Evaluation Methods:

Maximum Marks: **100**  
 Continuous Comprehensive Evaluation (CCE): **40** Marks  
 University Exam (UE): **60** Marks

<b>Internal Assessment:</b> Continuous Comprehensive Evaluation (CCE)	Class Test	20
	Assignment/Presentation	20
<b>Total Marks: 40</b>		
<b>External Assessment:</b> University Exam (UE) Time: 02.00 Hours	Section (A): Short Answer type questions	$04 \times 05 = 20$
	Section (B): Long Answer Type Questions	$08 \times 05 = 40$
<b>Total Marks: 60</b>		

<b>PART A: Introduction</b>			
Program: Certificate		Class: I SEM	Year: I Year
Session: 2021-22			
<b>Subject:</b> Computer Science			
1.	Course Code	BSCH 106	
2.	Course Title	<b>Web Designing</b>	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational)	<b>Vocational Course</b>	
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Computer.	
5.	Course Learning Outcomes(CLO)	<ul style="list-style-type: none"> <li>• Understand the principles of creating an effective web page, including an in-depth consideration of information architecture.</li> <li>• Become familiar with graphic design principles that relate to web design and learn how to implement theories into practice.</li> <li>• Develop skills in analyzing the usability of a web site.</li> <li>• Understand how to plan and conduct user research related to web usability.</li> <li>• Learn the language of the web: HTML and CSS.</li> <li>• Learn CSS grid layout and flexbox.</li> <li>• Learn techniques of responsive web design, including media queries.</li> <li>• Develop skills in digital imaging (Adobe Photoshop.)</li> <li>• Develop basic programming skills using Javascript and jQuery.</li> <li>• Be able to embed social media content into web pages.</li> </ul>	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40

<b>PART B: Content of the Course</b>		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	Introduction of Internet, World Wide Web, client server architecture, web server, web browser, domain names, URL, web pages and web sites, hosting website.	12
II	Basic HTML: Introduction of HTML, HTML structure, HTML editor, tags, attributes, Comments, divisions, Elements, nested elements, Formatting,	12

	Heading, paragraph, Phrase tag, hyperlink-absolute and relative URL linking, outer link and inner link, tooltip on link, where to open linked document.	
III	Advanced HTML: Display Images, Table, list, iframe, Form tag, Form attributes-action and method, Form Input Types- text, password, checkbox, radio, submit and reset. Form elements- input, label, select, textarea, fieldset. HTML multimedia-audio, video, play youtube video on our webpage.	12
IV	CSS: Introduction, Syntax, Selector, Add CSS to HTML, CSS comments, CSS properties- background, color, border, margin, padding, Height, width, outline, text formatting, fonts, float, alignments, pseudo-classes, opacity, design website layout using CSS.	12
V	JavaScript: Introduction,Script element, external JavaScript file, comments, output functions, variables, data types, operators, If statements, switch, loop, arrays, string, objects, events, Alert box, Getting data with forms, Validation. Basic overview of server side scripting languages like PHP.	12

**PART C: Learning Resources**

Textbooks, Reference Books, Other Resources

**Suggested Readings:**

1. HTML & CSS: The Complete Reference, Fifth Edition by Thomas A. Powell
2. Mastering HTML, CSS & Javascript Web Publishing by Jennifer Kyrnin Laura Lemay, Rafe Colburn
3. PHP The Complete Reference by Steven Holzner
4. Mastering PHP 7 by Branko Ajzele

**Suggestive digital platform web links:**

<https://www.javatpoint.com/>

<https://www.w3schools.com/default.asp>

[https://www.tutorialspoint.com/web\\_development\\_tutorials.htm](https://www.tutorialspoint.com/web_development_tutorials.htm)

**Suggested equivalent online courses:**

<b>Part D: Assessment and Evaluation</b>		
<b>Suggested Continuous Evaluation Methods:</b>		
Maximum Marks:		<b>100</b>
Continuous Comprehensive Evaluation (CCE):		<b>40 Marks</b>
University Exam (UE):		<b>60 Marks</b>
<b>Internal Assessment:</b> Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	20 20 <b>Total Marks: 40</b>
<b>External Assessment:</b> University Exam (UE) Time: 02.00 Hours	Section (A): Short Answer type questions	$04 \times 05 = 20$
	Section (B): Long Answer Type Questions	$08 \times 05 = 40$
		<b>Total Marks: 60</b>