Institute of Computer Science
Vikram University, Ujjain (MP)

SCHEME OF
BCA (HONS.)
(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

BCA (Hon's)

Programme Objectives:

BCA (Hon's) course is a full time Four years (Eight semesters) Bachelor's degree in Computer Application that aims to develop skills to analyze, design and implement computerized solutions. The programme provides key concepts in computer fundamentals, applications, software design & development and web design. The course aims to develop technical skills through exposure to programming, data structure, database management system and web development. The focus is on improving critical thinking, communication skills, managerial skills and ethical values. If the student wants to pursue higher studies abroad, he/she can obtain BCA (Hons) 4 years degree after successful completion of six semesters.

PROGRAMME OUTCOMES:

- **Employability**: Ability to get employment opportunities in corporate/government/private sectors or to be a successful entrepreneur.
- **Environment and sustainability**: Understand the impact of sciences and computers' to craft solutions in a global, economic, environmental, and societal context.
- **Modern tool usage**: Ability to use the modern programming languages, tools, techniques and skills necessary for design, develop and deploy software based applications.
- **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of upcoming information technology changes.
- **Domain Knowledge**: Ability to apply exploration to study and analyze problems in different areas of information technology.
- **Knowledge enhancement**: Comprehend the fundamentals, principles, applications and importance of computational concepts.
- **Higher Education**: Capability to move on to higher level learning based on computer science fundamentals.
- **Secure Digital Solutions**: Design and develop secure web centric solutions to boost digital transformation.
- Ability to analyze, interpret and present findings effectively using mathematical and communication skills.
- Understand the fundamentals and applications of programming, data structures, databases, networking, data mining, network security and software engineering.
- Amalgamate knowledge of information technology and software tools for programming.
- Ability to effectively apply the computer science concepts to analyze, design and develop cost effective, efficient and secure solutions to the societal problems.

VIKRAM UNIVERSITY, UJJAIN MP
(Session -2021-2022 onwards)
BCA (Hon's) 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.	BCAH 101 Major-1	Programming in C	4	0	4	30	45	100
	BCAH P	Programming in C	0	1	1	10	15	
2.	BCAH 102 Major-2	Operating System	5	0	5	40	60	100
3.	BCAH 103 Minor-1	Introduction to Information Technology	4	0	4	40	60	100
4.	BCAH-104 Generic Elective	Discrete Mathematical Structure	3	0	3	40	60	100
5.	Vocational/Skill Enhancement-Course from any faculty/Mooc Course	Web Designing	3	0	3	40	60	100
Total Credits and marks					20			600

PART A: Introduction			
Programme:Certificate	Class: I SEM	Year: I Year	Session: 2021-22
Subject: Computer Application			
1.	Course Code	BCAH 101	
2.	Course Title	**Programming in C**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core course**	
4.	Pre-Requisite (if any)	Basic fundamentals of computer	
5.	Course Learning Outcomes(CLO)	- Identify situations where computational methods and computers would be useful. - Given a computational problem, identify and abstract the programming task involved. - Approach the programming tasks using techniques learned and write pseudo-code. - Choose the right data representation formats based on the requirements of the problem. - Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 75	Min. Passing Marks:

PART B: Content of the Course		
Total No. of Lectures (in hours per week): 01 Hour 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 &	12

	Storage classes, Ternary operator, Type conversion & type casting, Priority & associativity of operators.	
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

PART C: Learning Resources
Textbooks, Reference Books, Other Resources

Suggested Readings:
   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.

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://beginnersbook.com/2014/01/c-functions-examples/ https://www.javapoint.com/data-types-in-c

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: **75** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): **45** Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	15 15 **Total Marks: 30**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	$03 \times 05 = 15$ $06 \times 05 = 30$ **Total Marks: 45**

PART A: Introduction				
Program: **Certificate**		Class: **B.C.A.**	Year: **I Year (I Sem)**	Session: **2021-22**
Subject: **Computer Applications**				
1.	Course Code	BCAH 101P		
2.	Course Title	**Programming in C**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	To study this course, a student must have basic logical and analytical skills.		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following**: 1. Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. 2. Writing efficient and well-structured computer algorithms/programs. 3. Learn to formulate iterative solutions and array processing algorithms for problems.		
6.	Credit Value	**Practical – 1 Credits**		
7.	Total Marks	Max. Marks : **10+15**	Min. Passing Marks: **10**	
PART B: Content of the Course				
No. of Lab Practicals (in hours per week): **2 hours per week**				
Total No. of Lab.: **60 Hrs.**				
		Suggestive list of Practicals		No. of Labs.
		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 : 1. Write a program to input N numbers and find their average. 2. Write a program to calculate area and circumference of circle for given radius. 3. Write a program to covert the temperature from Fahrenheit to Celsius. 4. Write a program to swap the contents of two variables with the help of third variable. 5. Write a program to swap the contents of two variables without third variable. 6. Write a program to find area of a circle, rectangle, square using switch case. 7. Write a program to print table of any number. 8. Write a program to print Fibonacci series. 9. Write a program to find factorial of a given number.		60

10. Write a program to print digits of entered number in reverse order.
11. Write a program to generate even/odd series from 1 to 100.
12. Write a program whether a given number is prime or not.
13. Write a program for call by value and call by reference.
14. Write a program to create a pyramid structure

      1
      12
      123
      1234

15. Write a program to print sum of two matrices.
16. Write a program to print multiplication of two matrices.
17. Write a program to calculate the length of a given string.

18. Write a program to illustrates the concept of Dynamic Memory Allocation.

19. Write a program to illustrates the concept of Structure.

20. Write a program to illustrates the use of Command Line Argument.

PART C: Learning Resources
Textbooks, Reference Books, Other Resources

Suggested Readings

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.

Reference Books:

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://beginnersbook.com/2014/01/c-functions-examples/
https://www.javapoint.com/data-types-in-c

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **10Marks**		**External Assessment**: University Exam (UE) : **15 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
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
Total *Excursion/ Lab visits/ Industrial Training is compulsory*	**10 Marks**	**Total**	**15 Marks**

	PART A: Introduction			
Program: Certificate		Class: II SEM	Year: I Year	Session: 2021-22
Subject: Computer Application				
1.	Course Code	**BCAH-102**		
2.	Course Title	**Operating Systems**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	Students must have the basic knowledge of Computer basics.		
5.	Course Learning Outcomes(CLO)	Upon successful completion of this course, students will be able to: - Identify and describe the Services Provided by Operating Systems. - Understand and Solve Problems Involving Process Control, Mutual Exclusion, Synchronization and Deadlock. - Apply Various Approaches of Memory Management Techniques - Understand the Structure and Organization of the File System. - Implement Processor Scheduling, Synchronization and Disk Allocation Algorithms for a Given Scenario.		
6.	Credit Value	3 Credit		
7.	Total Marks	Max. Marks : 100		Min. Passing Marks: 40

PART B: Content of the Course		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	**Introduction to Operating Systems:** 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, 1/0 devices organization, I/O buffering.	12
II	**Process concept:** 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	**Concepts of memory management:** 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

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Reading:

1. Operating System by Silberschatz.

2. Operating System by Deitel

3. Modern operating system by Tanneubacem.

4. Donovan, J.J. : System programming, Mcgraw Hill,1972

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

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	20 20 **Total Marks: 40**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	$04 \times 05 = 20$ $08 \times 05 = 40$ **Total Marks: 60**

PART A: Introduction			
Program: Certificate	Class: I SEM	Year: I Year	Session: 2021-22
Subject: Computer Application			
1.	Course Code	BCAH 103	
2.	Course Title	**Introduction to Information Technology**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Minor Core**	
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Computer.	
5.	Course Learning Outcomes(CLO)	**Understand the Fundamental of Computer** **Understand the concept of Object Oriented Programming** **Understand the concept of Operating System** **Understand the concept of Data Base Management System** **Understand the concept of Data Communication and Computer Network**	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40

PART B: Content of the Course		
Total No. of Lectures (in hours per week): 01 Hours per day		
Total Lectures: 60 Hours		
Unit	Topics	No. of Lectures
I	**Computer Fundamental:** 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	**Software and Computer Applications:** 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	**Operating System Overview:** 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	**Introduction to DBMS:** 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	**Introduction to Computer Networks:** 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

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings: 1. Operating Systems Concepts, A. Silberschatz, P.GaIvin, G.Gagne, John Wiley & Sons 2. Object Oriented Programming in C++, Robert Lafore, Galgotia Publication. 3. Data base management systems vol. 1., Date C.J. 4. Fundamental of Computer Science & IT, Singh Umesh Kumar, Jain S., Maheshwari A., SSDN Publications New Delhi, 5. Data Communications and Networks, Godbole A, Tata McGraw-Hill Publications.
Suggestive digital platform web links: https://edu.gcfglobal.org/en/computerbasics/ https://edu.gcfglobal.org/en/subjects/office/ https://vikaspedia.in/education/digital-literacy/it-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals https://www.tutorialspoint.com/computer_fundamentals/index.htm https://nptel.ac.in/courses/106/106/106106092

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	20 20 **Total Marks: 40**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	$04 \times 05 = 20$ $08 \times 05 = 40$ **Total Marks: 60**

PART A: Introduction			
Program: Certificate	Class: I SEM	Year: I Year	Session: 2021-22
Subject: Computer Application			
1.	Course Code	BCAH 104	
2.	Course Title	**Discrete Mathematical Structure**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Generic Elective**	
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Maths.	
5.	Course Learning Outcomes(CLO)	- Students will learn the basic concepts of sets, permutations, relations, graphs, trees. - Students will represent discrete objects and relationships using abstract mathematical structures. - Apply the Operations of Sets and use Venn Diagrams to Solve Applied Problems; - Understand, Explain and Apply the Basic Principles of Sets and Operations in Sets to Solve the Problems - Analyze Modern Problems in Computer Science and solve them Using Graphs and Trees.	
6.	Credit Value	3 Credit	
7.	Total Marks	Max. Marks : 100	Min. Passing Marks: 40

PART B: Content of the Course		
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		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	20 20 **Total Marks: 40**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	$04 \times 05 = 20$ $08 \times 05 = 40$ **Total Marks: 60**

PART A: Introduction				
Program: Certificate		Class: I SEM	Year: I Year	Session: 2021-22
Subject: Computer Application				
1.	Course Code	BCAH 106		
2.	Course Title	**Web Designing**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Vocational Course**		
4.	Pre-Requisite (if any)	To study this course, a student must have the basic knowledge of Computer.		
5.	Course Learning Outcomes(CLO)	- Understand the principles of creating an effective web page, including an in-depth consideration of information architecture. - Become familiar with graphic design principles that relate to web design and learn how to implement theories into practice. - Develop skills in analyzing the usability of a web site. - Understand how to plan and conduct user research related to web usability. - Learn the language of the web: HTML and CSS. - Learn CSS grid layout and flexbox. - Learn techniques of responsive web design, including media queries. - Develop skills in digital imaging (Adobe Photoshop.) - Develop basic programming skills using Javascript and jQuery. - Be able to embed social media content into web pages.		
6.	Credit Value	3 Credit		
7.	Total Marks	Max. Marks : 100		Min. Passing Marks: 40

PART B: Content of the Course		
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 BrankoAjzele

Suggestive digital platform web links:

https://www.javatpoint.com/

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

https://www.tutorialspoint.com/web_development_tutorials.htm

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	20 20 **Total Marks: 40**
External Assessment: University Exam (UE) Time: 03.00 Hours	Section (A):Short Answer type questions Section (B): Long Answer Type Questions	$04 \times 05 = 20$ $08 \times 05 = 40$ **Total Marks: 60**