Mahavir Mahavidyalaya, Kolhapur (Autonomous) Affiliated to Shivaji University, Kolhapur

(New syllabus	under Autonomy	to be introduced	from June, 202	24 onwards)
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Primary Information:				
Programme	Bachelor of Science (B.Sc.) CBCS			
Course	Computer Sci.	Course Type	Semester	
Part	II	Semester	III	
Paper No.	V	Course Code	DSC H5	
Total Credits	02	Total Marks	50	
Paper No.	VI	Course Code	DSC H6	
Total Credits	02	Total Marks	50	
Implementation	2022 - 23	Contact Hours	05 / Week	

Primary Information:			
Programme	Bachelor of Science (B.sc.) CBCS		
Course	Computer Sci.	Course Type	Semester
Part	II	Semester	IV
Paper No.	VII	Course Code	DSC H7
Total Credits	02	Total Marks	50
Paper No.	VIII	Course Code	DSC H8
Total Credits	02	Total Marks	50
Implementation	2022 - 23	Contact Hours	05 / Week

• STRUCTURE OF COURSE

Sr. No.	Paper	Name of Paper	Marks
		Computer Science (Semester III)	I
			50(40+10)
1	DSC H5	Web Programming	40 : ESE
			10 : CIE
			50(40+10)
2	DSC H6	Object Oriented Programming Using C++	40 : ESE
			10 : CIE
		Computer Science (Semester IV)	
			50(40+10)
3	DSC H7	PHP & MySQL	40 : ESE
			10 : CIE
			50(40+10)
4	DSC H8	Data Structure Using C++	40 : ESE
			10 : CIE
Practical(Annual)			
5	Practical Paper -II	Computer Science Practical Paper Based On DSC H5,DSC H6,DSC H7, DSC H8	100 Marks

B.Sc. Part –II Computer Science Optional (Semester–III) Course Code: DSC-H5 Computer Paper –V Course Title: Web Programming Total Contact Hours: 36 Hrs. (45 Lectures of 48 Min.) **Teaching Scheme: Theory – 03 Lect. / Week**

Credits: 02

Total Marks: 50

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Course Outcomes:

Students will be able

- 1. To learn basic tags used in HTML
- 2. To develop their own cascading sheets.
- 3. To understand basic concept of PHP.

C Syllabi

Course Synabl:		
(CR = Credits / IH: Instructional Hours)		
Modules	CR	IH
Module I : Introduction to HTML and CSS		
1.1 Html Basic- Heading, formatting, paragraph, Comments	•	
1.3 HTML tags and attributes-HTML fonts, color, table, list		
1.4 HTML form elements-input tag, layout.	01	16
1.5 HTML5 attributes, events, canvas, audio and video.	01	10
1.6 Introduction of CSS, advantages and limitation of CSS, syntax		
1.7 types of CSS, CSS properties		
Module II : Introduction to PHP		
2.1 Introduction: Evaluation, Features, PHP Script (PHP tags php ? , echo		
command, PHP script execution on terminal and web browser.		
2.2 Variables: Basics, Data types(Boolean, Integers, Floating points Doubles, Strings, NULL, Arrays, Resources), Variable naming rules, scope(Local, Global, static, function parameter), unset variable, Functions(gettype(), isset(), is_array(), is_bool(), is_float(), is_int(), is_null(), is_string(), is_resource())	01	20
2.3 · Constant: define() function to define constant, constant() to retrieve		

value of constant, difference between constant and variable, PHP

predefined constants	
 2.4 Operators: Arithmetic, Comparison, Relational, Assignment, Increment-Decrement, Ternary, Bitwise, Casting, Other operators (., \$, @, {}, ``, =>) 	
2.5 Strings: Single Quoted and Double Quoted, escape sequences, Multiline String, Concatenation operator(.), string functions(chr(), strlen(), ltrim(), rtrim(), strtoupper(), strtolower(), strcmp(), substr(), strrev(), echo(), print(), printf())	
2.6 Decision Making Statements: if, if else, if elseifelse, switch statement	
Iterative Statements: for, while, do while, foreach, break and continue statement	
2.7 Exit statements: exit, die	

- Reference Books
 - 1. Complete HTML- Thomas Powell
 - 2. Introducing HTML5- BruceLawson, RemySharp
 - 3. HTML Blackbook- Steven Holzner
 - 4. PHP Concepts Unleashed For Novice Vol I By Poornima Naik, Kavita Oza, Evincepub Publishing
 - 5. PHP A Beginner's Guide Vikram Vaswami
 - 6. PHP 5.1 for Beginners By Ivan Bayross and Sharanam Shah(Shroff Publishers & Distributors)

B.Sc. Part –II Computer Science Optional (Semester– III) Course Code: DSC-H6 Computer Paper –VI Course Title: Object Oriented Programming Using C++ Total Contact Hours: 36 Hrs. (45 Lectures of 48 Min.) Teaching Scheme: Theory – 03 Lect. / Week

Credits: 02

Total Marks: 50

Course Outcomes:

Perform object oriented programming to develop solutions to problems demonstrating usage of control Structures, modularity, I/O and other standard language constructs.

Students will be able

- 1. To understand how C++ improves C with object oriented features
- 2. To learn syntax and semantics of C++ programming language.
- 3. To learn how to overload functions and operators in C++.
- 4. To learn how to design C++ classes for code reuse.
- 5. To learn how inheritance and virtual functions implement dynamic binding with polymorphism.

Course Syllabi:		
(CR = Credits / IH: Instructional Hours)		
Modules	CR	IH
Module I : Introduction to C++ and Object Oriented		
Programming		
1.1 Some Concepts: Procedure Oriented programming versus Object oriented programming, Benefits of C++ over C Language		
1.2 Object oriented programming Concepts: Object, class, Encapsulation, Abstraction, Polymorphism, Inheritance.		
1.3 Basics of C++ : Terminology-Tokens, Keywords, Identifiers, constants, Basic data types, Variables : Definition, Declaration, Initialization, Dynamic Initialization and reference variables		
Structure of C++ program, Input and output streams.		
1.4 Operators in C++: Dynamic Memory allocation (New and Delete), scope resolution operator, manipulators (setw, endl, setprecision).	01	20
1.5 Functions: Prototyping, Function Call, default arguments, const arguments, inline function.		
1.6 Classes and objects : Definitions, class declaration, Access modifiers: private, public and protected, Member function,		
Defining member functions (Inside and outside the class), object		
definition, Array of objects, passing object as parameter, static members (data members and member accessing function)		

1.7 Constructors: Definition, types- Default constructor, Copy		
constructor, Parameterized constructor, Destructors.		
1.8 Friend function and friend class.		
Module II : Inheritance and Polymorphism		
2.1 Inheritance: Introduction, Defining base and derived class. Types of		
Inheritance (single, multilevel, multiple, hierarchical, hybrid),		
Introducing protected members, virtual base class		
2.2 Polymorphism: Definition, Types of polymorphism.		
2.3 Function Overloading	01	1.0
2.4 Operator overloading: Concept. Rules, definition of operator	01	16
function, Overloading unary and binary operators.		
2.5 Virtual and pure-virtual functions (abstract class), rules for virtual		
functions,		

• Reference Books

- 1. Object Oriented Programming in C++ Rajesh K. Shukla
- 2. Object Oriented Programming with C++ Poonam Ponde
- 3. Object Oriented Programming with C++ E Balagurusamy
- 4. C++ Programming D. Ravichandran
- 5. A Tour of C++ $(2^{nd}$ Edition) Bjarne Stroustrup.
- 6. The C++ Programming Language (4th Edition) Bjarne Stroustrup.

• Practical Based on DSC H6 :

Use "Problem Solving Techniques" For Following problems and implement code through C++ programming language. It include: Problem Analysis, Algorithm, Flowchart, Source Code with Output.

First introduce Linux Operating System, GPU commands, C++ compilation process and components (cpp, g++, as only) with simple program and Debugging.

1.	Program based on basic concept of C++.
2.	Program based on concept of Dynamic Memory Allocation Operator.
3.	Program based on concept of function with default arguments.
4.	Program based on concept of inline function
5.	Program based on concept of C++ class and objects.

6.	Program based on concept of Array of object.
7.	Program based on concept of static data member and static function.
8.	Program based on concept of constructor and destructor.
9.	Program based on concept of friend function and friend class.
10.	Program based on concept of Inheritance.
11.	Program based on concept of Function Overloading.
12.	Program based on concept of Operator Overloading.
13.	Program based on concept of Pure virtual function.

B.Sc. Part –II Computer Science Optional (Semester– IV) Course Code: DSC-H7 Computer Paper –VII Course Title: Php & MySQL Total Contact Hours: 36 Hrs. (45 Lectures of 48 Min.) Teaching Scheme: Theory – 03 Lect. / Week

Credits: 02

Total Marks: 50

Course Outcomes:

Students will be able

- 1. To Learn how to developing applications in PHP using MySQL.
- 2. To learn and develop various PHP technology applications that definitely meets the Current industry needs.

Course Syllabi:

(CR = Credits / IH: Instructional Hours)

Modules	CR	IH
Module I : Php Array and Function		
 1.1 User Defined Functions: Declaring functions, function arguments(by val, by ref, default arguments, variable number of arguments),return statement(by val, by ref), recursion, global scope, static variables, Dynamic Function call 1.2 Arrays: Concept, Types(Numerical/List, Associative/Maps, Multi-Dimensional), empty array, Initialization of arrays([] operator, array() function, range() function), inserting element in array, Display entire array(print_r(), var_dump()) 1.3 Forms get & post methods. PHP super global variables (\$_PHP_SELF, \$_GET, \$_POST, \$_SERVER, \$_COOKIES, \$_REQUEST) 1.4 Session and Session variables 	01	18

1.5 Form Validation		
Module II : MySql connectivity		
2.1 Connect, Close, Select a database		
2.2 execute MySQL query.		
2.3 create cursor, Fetch rows from tables as row as numeric as well as associative array	01	18
2.4 cursor ,release memory of cursor(mysql_free_result() mysqli_free_result())		
2.5 Data backup and restore.		

- Reference Books
 - 1. PHP and MySQL By Dreamtech Publications
 - 2. PHP and MySql for dummies by Janet Valade
 - 3. PHP A Beginner's Guide Vikram Vaswami
 - 4. PHP 5.1 for Beginners By Ivan Bayross and Sharanam Shah(Shroff Publishers & Distributors)
 - 5. Programming PHP by RasmusLerdorf, Kevin Tatroe

• Practical Based on DSC H5 and H7 :

Use "Problem Solving Techniques" For Following problems and implement code through PHP programming language. It include: Problem Analysis, Algorithm, Flowchart, Source Code with Output.

1.	Program based on basic tag of Html
2.	Program based on HTML5 Tag
3.	Program based on CSS and CSS Types
4.	Program Based on HTML form Tags.
5.	Program based on Operators
6.	Program based on Decision Making Statements
7.	Program based on iterative statement
8.	Program based on Array
9.	Program based on String.
10.	Program based on function
11.	Program based on validation function

12.	Program based on get method .
13.	Program based on post method.
14.	Program based on session.
15.	Program based on cookies
16.	Program based on connect MySql database.
17.	Program based on manipulate data in a table using php
18.	Program based on display content of table using php
19.	Program based on display group by particular column using php
20.	

B.Sc. Part –II Computer Science Optional (Semester– IV) Course Code: DSC-H8 Computer Paper –VIII Course Title: Data Structure Using C++ Total Contact Hours: 36 Hrs. (45 Lectures of 48 Min.) Teaching Scheme: Theory – 03 Lect. / Week

Credits: 02

Total Marks: 50

• Course Outcomes:

Students will be able to

1. Understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data Structures.

2. Ability to choose appropriate data structures to represent data items in real world problems.

3. Ability to analyze the time and space complexities of algorithms.

4. Ability to design programs using a variety of data structures such as array, stacks, queues, linked list etc.

5. Able to analyze and implement various kinds of searching and sorting techniques

Course Syllabi:		
(CR = Credits / IH: Instructional Hours)		
Modules	CR	IH
Module I : Introduction to Data Structure and Array		

1.1 Concept of Data, Data Object, Types of Data- Atomic Data, Non- atomic Data		
1.2 Concept of Data Structure		
1.3 Abstract data type (ADT)		
1.4 Array : Definition, Array Operations, Types of Array, Applications of Array(Polynomial evaluation and addition of two polynomials)		16
1.5 Algorithm Analysis : Space complexity, time complexity,		10
Asymptotic notation (Big O, Omega Ω , Theta Θ)		
1.6 Searching: Linear and Binary Search		
1.7 Sorting : Bubble sort, Selection sort, Insertion sort, Quick sort		
Module II : Linear and Non Linear Data Structure		
2.1 Stack : Concept of Stack, Operations on Stack(push, pop, peek ,isfull, isempty), implementation of Stack using array,		
Applications of Stack- Recursion, Infix, Prefix, Postfix, conversion from Infix to Prefix and Infix to Postfix		
2.2 Queue : Concepts of queue, Operations on Queue (Enqueue,Dequeue, Peek, Isfull, Isempty), Implementation of queue using array,Types of Queue (Linear, Circular and Priority),		
Applications of Queue.		20
2.3 Linked List : Concept of linked list, Types of Linked List (Singly- Doubly, Linear-Circular),Implementation of Linked list, Operations on linked list (Insertion, Deletion, Display, Search)		
2.4 Trees: Definition, Terminologies (Root, Child, Parent, Siblings, Descendant, Ancestor, Leaf/External node, Branch node/Internal node, Degree, Edge, Path, Level, Depth, Height of node, Height of tree, Forest)		
Binary Tree: Definition, Types (Full/Proper/Plane, Complete, Perfect, Skewed, Balanced), Binary Search Tree.		

• Reference Books

- 1. Data Strucure using C and C++ -Rajesh Shukla
- 2. Data Strucure using C and C++ Tanenbaum
- 3. Data Strucure using C++ E Balagurusamy
- 4. Data Strucure using C++ Yashwant Kanetkar
- 5. Data Strucure using C++ D.S.Malik

• Practical Based on DSC H8 :

Use "Problem Solving Techniques" For Following problems and implement code through C++programming language. It include : Problem Analysis, Algorithm, Flowchart, Source Code with Output.

1.	Program to implement polynomial for given value.
2.	Program to implement searching technics (Linear and Binary).
3.	Program to implement sorting techniques(Bubble sort, Insertion sort, Quick sort, Selection sort)
4.	Program to implementation and Operation on stack
5.	Program to implementation and Operation on queue.
6.	Program to implementation and Operation on Circular queue.
7.	Program to implementation and Operation on Priority queue.
8.	Program to implementation and Operation on Linear Linked List.
9.	Program to implementation and Operation on Circular Linked List.
10.	Program to implementation and operation on Tree.

• End Semester Examination Question Paper Pattern : 40 Marks

Q. No.	Nature/Type of Question	Marks	Total
1.	Multiple Choice Question (06)	Each for 01 Marks	06
2.	Short Answers(5)	Each for 02 Marks	10
3.	Solve Any 4 out of 6	Each for 03 Marks	12
4.	Solve Any 1 out of 2	Each for 06 Marks	06
5.	Solve Any 1 out of 2	Each for 06 Marks	06
Total			40

• Continuous Internal Evaluation(CIE) Pattern : 10 Marks

- MCQ test
- Unit Test

Any one from above for CIE

• Practical Examination

The practical examination in Computer Science is conducted at end of each academic year which will be

1.Practical Question Paper II and III For B.Sc. II will be of maximum 50 marks each 2. Practical Paper III based on Course DSC H5 and DSC H7

3.Practical Paper IV based on course DSC H6 and DSC H8 of 4 hours duration and of 50 maximum marks.

• Nature of Practical Examination:

Paper Name	Practical Paper –II and III
Total No. Of Questions	04
No. Of questions should be attempt	02
Each Question	20 Marks(Total 40 Marks)
Certified Journal	5Marks
Viva Based on Practical	5 Marks
Total Marks	50