

## Teaching Plan

### Academic Year 2015-16

**Class** : M.Sc. Computer Science I yr. **Semester: I**  
**Subject** : Object Oriented Programming using C++ **Paper No: I (01)**  
**Periods per Week** : Th. \_\_\_\_ Pract. \_\_\_\_ **Test (Date):** \_\_\_\_\_  
**Week (Total)** : 15 **Tutorials (Date):** \_\_\_\_\_

Week	Topic to be covered
1	<b>Unit-I</b> An overview of object oriented programming, Drawbacks of procedural programming, Concepts of OOP: Class, Object, Data abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing. An overview of C++ programming: basic programming construction, program statements, cout & cin, preprocessor directives.
2	Variables, Constants and its types. escape sequence characters, input/output with cin and cout, cascading, expressions, the #define directive, Manipulators: the endl and setw manipulator, type conversions
3	Data types, Primitive, Derived & User defined data types, Type modifiers (long, short, signed, unsigned). Operators: Arithmetic, Relational, Logical, Assignment, Ternary, Bitwise, Unary Operators.
4	<b>Decision Making Statements</b> : if, if-else statement, nested if-else, else if ladder, switchcase statement. Conditional statement.
5	<b>Unit-II</b> <b>Loops:</b> The while loop, do-while loop, the for loop, for loop variations
6	<b>Arrays:</b> Introductions, defining and initializing arrays, accessing array elements, Single and multidimensional arrays. Character array, string variables, reading multiple lines, arrays of strings.
7	<b>Structures:</b> Specifying the structure, accessing structure members, array of structures, nested structures, structures and classes, enumerated data types.
8	<b>Functions:</b> Function declaration and definition,, Calling the Function, comparison with library functions, passing arguments to functions: passing variables, passing by value, passing structure variables, Returning values from functions, returning structure

	variables, reference arguments.
9	<p><b>Unit-III</b></p> <p><b>Objects and classes: Class:</b> A Simple Class, C++ Objects as Physical Objects, C++ Objects as Data Types, Constructors and Destructors, Objects as Function Arguments, The Default Copy Constructor, Returning Objects from Functions, Arrays as Class Member Data, Arrays of Objects, Structures and Classes, Classes, Objects, and Memory, Static Class Data, const and Classes.</p>
10	<p><b>Overloading</b> Unary Operators, Overloading Binary Operators, Data Conversion, Pitfalls of Operator Overloading and Conversion, Keywords explicit and mutable</p>
11	<p><b>Unit-IV</b></p> <p><b>Inheritance:</b> Derived Class and Base Class, specifying the derived class, accessing base class members, the protected access specifier, derived class constructors, overriding member functions, class hierarchies, “abstract” base class, constructors and member functions, multilevel, multiple inheritances, member functions in multiple inheritances, ambiguity and multiple inheritances.</p>
12	<p><b>Virtual Functions:</b></p> <p>Function overriding, Virtual base class, Virtual functions &amp; dynamic binding.</p>
13	<p><b>Files and Streams:</b></p> <p>Stream Classes, Stream Errors, Disk File I/O with Streams , File Pointers, Error Handling in File I/O, File I/O with Member Functions, Overloading the Extraction and Insertion Operators, Memory as a Stream Object, Command-Line Arguments, Printer Output</p>
14	<p><b>Unit V:</b></p> <p><b>Microsoft Visual C++:</b></p> <p>Screen Elements, Single-File Programs, Multi-file Programs, Building Console Graphics Lite Programs, Debugging, Running the Example Programs in C++Builder, Cleaning Up the Screen, Creating a New Project</p>
15	<p>Naming and Saving a Project, Starting with Existing Files, Compiling, Linking, and Executing, Adding a Header File to Your Project, Projects with Multiple Source Files.</p>

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## Teaching Plan

### Academic Year 2015-16

**Class** : M.Sc. Computer Science I yr. **Semester: I**  
**Subject** : Advanced Operating Systems **Paper No: II (02)**  
**Periods per Week** : Th. 04 Pract. 04  
**Week (Total)** : 15

Week	Topic to be covered
1	<b>Unit-I:</b> <b>Introduction:</b> What is an operating system? Operating system layered structure, Types of an operating system (Mainframe, Server operating, Personal computer system, Handheld operating system, Embedded, Sensor node, Real time, Smart card), Operating system as resources manager(Memory,Processor,Device, Information Management)
2	<b>Concept Of Operating SysTEM:</b> Review of Hardware, Processors, Memory, Disks, Tapes, I / O devices, Buses, Booting process, GUI, System calls.
3	<b>Unit- II:</b> <b>Processor Management:</b> Introduction ,Definition of process, Process states, Process state transition, The process control block, Operations on process, Evolution of multiprogramming, Context switching, Process scheduling,
4	Types of schedulers: (Short term, Medium term and long term schedulers, Preemptive and Non preemptive), Scheduling algorithms: FCFS, SJF, Priority & RR scheduling problems based on these algorithms ,scheduling criteria
5	<b>Dead Locks:</b> Introduction, Graphical representation of a deadlock, Deadlock prerequisites, Mutual exclusion condition, Wait for condition, No preemption condition, Circular wait condition,
6	Deadlock strategies(Ignore a deadlock, Detect a deadlock, Recover from Deadlock, Prevent a deadlock, Avoid a deadlock,)Bankers algorithm for deadlock avoidance (safe and unsafe state),Problems based on Bankers algorithm.
7	<b>Unit-III:</b> <b>Basics Of Storage/Memory Management :</b> Memory or storage Organisation, Storage management, Storage hierarchy, Storage management strategies memory allocation strategies( best fit, first fit , worst fit), Contiguous v/s non -contiguous storage allocation, Single user contiguous storage, Fixed partition multiprogramming, Variable partition multiprogramming, Multiprogramming with storage swapping

8	<b>Virtual Memory:</b> Basic concept, Multilevel storage organisation, Block mapping, Paging: Basic concept, Paging address translation by direct mapping, Paging address translation by associating mapping,
9	Paging Types(Demand, Anticipatory), Page fault, Page replacement algorithms FIFO, LRU, Optional page, problems based on these algorithms, thrashing, working set model..
10	<b>Unit-IV:</b> <b>Device Management:</b> Dedicated devices, Shared devices, Virtual devices, I/O Devices, Storage devices, types of storage devices(Serial Access, Completely Direct Access, Direct Access), Sharable & Non sharable devices and their management, Spooling concept, concept of virtual devices, device drivers.
11	<b>Information Management:</b> File concepts, Access methods, File system structure, Directory structure, and disk structure, disk space allocation methods( Continuous, Linked allocation, Indexed allocation),
12	Disks Scheduling, disk scheduling algorithms (SSTF, FCFS, Scan methods, CScan), Free space management.
13	<b>Unit-V:</b> <b>Network Operating System:</b> Remote log in, Remote file transfer, Remote file access, Distributed O S, Distributed file transfer
14	Mutual exclusion in using centralised and distributed approach, Dead lock, Detection and Prevention.
15	<b>Security and protection:</b> Security threats, attack on security, computer worms and viruses Security design principles, authentication, protection mechanism.

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## Teaching Plan

### Academic Year 2015-16

**Class** : M.Sc. Computer Science I yr. **Semester: I**  
**Subject** : Web Design and Development using PHP **Paper No: III(03)**  
**Periods per Week** : Th. \_\_\_\_ Pract. \_\_\_\_ **Test (Date):** \_\_\_\_\_  
**Week (Total)** : 15 **Tutorials (Date):** \_\_\_\_\_

Week	Topic to be covered
1	<b>Unit-I</b> <b>Basic concepts:</b> Web standard: Standard Process, Advantage of Standard, Current Web Standard, Basic web designing: Introduction to web browser, architecture of web browser, web page, Static & dynamic web pages, home page, web-site. Web-servers & clients, Basic's of Internet, Internet Domain, Protocols definition, Overview of TCP/IP, Telnet, FTP, Communication between browser and web server.
2	<b>Introduction to HTML:</b> Structure of HTML program, <b>HTML paired tags, Singular Tag, Text formatting:</b> paragraph, line break, headings , drawing lines, <b>Text styles:</b> Bold, italics, underline, <b>Centering &amp; Spacing, Lists:</b> types of lists viz. unordered, ordered, definition lists,
3	<b>Adding graphics:</b> image, background, border, using width and height attributes. <b>Tables:</b> creation and setting attributes of table, width & border attribute, Cell Padding, Cell Spacing, Colspan & Rowspan Attributes, background color. <b>Linking documents (Links):</b> External document references, internal document references. <b>Frames:</b> frameset and frame tag.
4	<b>Forms in HTML:</b> Introduction to forms, FORM tag & it's attributes (Action, Method, Name), Simple form examples, Form controls: Text Field, Password Field, Multiline Text Area, Drop Down List ,Check Box, Radio Buttons, Scrolled List, Reset Button, Submit button.
5	<b>Unit-II</b> <b>Introduction to PHP:</b> What, Why and Evolution of PHP?, Installing PHP, Create PHP Script, Running PHP Script.
6	<b>Learning PHP Language:</b> Basic Building Blocks: Variable, Data Type, Operators & Expression, Constant.
7	<b>Control Structures:</b> if, if else,if elseif..else, for,foreach, do-while, while, break,

	continue, switch
8	<b>Arrays:</b> Anatomy of an Array: indexed and Associative Array, Creating Arrays, Accessing Array Elements, Looping through Array, Multidimensional Array, and Manipulating Array using array functions.value, passing
9	<b>Unit-III</b> <b>Functions:</b> What and why function, User-Defined Function, Function Arguments, Returning values, Calling Function, Variable Function, and Recursive Function.
10	<b>String &amp; Date-Time:</b> Creating & Accessing String, String Manipulation using string functions,Date-Time: Understanding Timestamp, Getting current date & time, Extracting date time values, format character for date, Formatting Date String.
11	<b>Classes and Objects:</b> Introduction to OOPS Concepts, Visibility Controls, Creating Class and Object, Create and using properties & methods, Overloading, Constructor, Destructor, Object Inheritance
12	<b>Unit-IV</b> <b>Handling FORM with PHP:</b> Capturing form Data with PHP, Dealing with Multi-value Fields, Validating Form Input, Generating Web Forms Storing Variable in Forms, Working with Multipage Forms, Creating FileUpload Forms, Redirecting form submission.
13	<b>Unit-V</b> <b>Preserving State in PHP:</b> Understanding cookies, Session & Query String, Saving State with Query String, Working with cookies, PHP Session to store data.
14	<b>Database Connectivity &amp; SQL:</b> Introduction to data storage, Understanding Relational Database, Setting Up MySQL,
15	Connecting to MySQL from PHP, Retrieving Data from MySQL (Select), Manipulating MySQL Data with PHP (insertion, updation & deletion)..

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## Teaching Plan

### Academic Year 2015-16

**Class** : M.Sc. Computer Science I yr. **Semester: I**  
**Subject** : Advanced Database Management System **Paper No: IV (04)**  
**Periods per Week** : Th. 04 Pract. 04  
**Week (Total)** : 15

Week	Topic to be covered
1	<p><b>Unit-I:</b></p> <p><b>Overview of Database Concepts:</b> Database and Need for DBMS, Characteristics of DBMS, Database Users, 3-tier architecture,(its advantages over 2-tier), Component of a database management System, Views of data: Data Abstraction &amp; Instances and schemas, Codd's Rules, Constraints, Different types of keys.</p> <p><b>Data Models:</b> Traditional database models, Relational model, Object- Based Data Model, Semi-structured Data Model, Data modeling using the Entity-Relationship approach, Entities, Relationships, Attributes, Representation of entities, Mapping Cardinalities, E-R Features: Generalization &amp; Aggregation.</p>
2	<p><b>Relational Model:</b> Relational Model, Structure of Relational Database and Expressing Relation, Relational Algebra: Unary &amp; binary Operation, Relational database languages.</p>
3	<p><b>Relational Database design:</b> Functional dependencies, and Normalization Normal forms based on primary keys (1 NF, 2 NF, 3 NF, BCNF, 4 NF) Loss less joins and dependency preserving decomposition</p>
4	<p><b>Unit-II:</b></p> <p><b>SQL Basic:</b> Data types, Table Creation CREATE, ALTER, DROP, Adding constraints, INSERT, UPDATE, DELETE, Views, Index &amp; Sequence, Functions: Aggregate, String, Date, Numeric, Queries: Subqueries &amp; Nested queries, grant/revoke privileges</p>
5	<p><b>Relational Database design:</b> Functional dependencies, and Normalization Normal forms based on primary keys (1 NF, 2 NF, 3 NF, BCNF, 4 NF, 5 NF) Loss less joins and dependency preserving decomposition</p> <p><b>PL/SQL:</b> PL/SQL Definition, PL/SQL Block, function, procedure, cursor, trigger, exception handling</p>
6	<p><b>Unit III:</b></p>

	<b>Indexing and Hashing:</b> Basic Concepts, Ordered Indices- primary & secondary, B+ Tree Index Files, B- Tree Index Files, Static Hashing, Dynamic Hashing.
7	<b>Query Processing:</b> Introduction to Query Processing, Structure of Query processor, General Strategies for Query Processing, Transformation into an Equivalent Expression, Expected Size of Relations in the response: Selection; Projection; join, Query Improvement, Query Evaluation: One & Two Variable Expression (Nested Loop, Sort and Merge Method).
8	<b>Transaction Management: Transaction:</b> Concept, properties of Transaction, Transaction States, Implementation of Atomicity and Durability, Concurrent Execution, Serializability, Recoverability..
9	<b>Concurrency Control:</b> Lock-Based Protocol and Timestamp based Protocols, Multiple Granularity. Deadlock Handling: Deadlock Prevention, Detection and Recovery.
10	<b>Unit-IV:</b> <b>Database System Architecture:</b> Centralized and Client – Server Architecture, Server System Architectures, Parallel System, Distributed Systems.
11	<b>Distributed Database:</b> Homogeneous and Heterogeneous databases, Architecture and design of distributed databases (DDBMS), Advantageous and Disadvantageous of DDBMS, Distributed data storage: Fragmentation & Replication, Transparency, Distributed Transactions, Commit Protocols (Two-phase Commit) for distributed databases.
12	<b>Parallel Database:</b> I/O Parallelism, Partitioning Techniques and its comparison, Handling of Skew, Interquery Parallelism, Intraquery Parallelism, Design of Parallel system
13	<b>Unit-V:</b> <b>Object Oriented Databases(OODBMS):</b> Characteristics of an Object- Oriented Data Model, Complex data types, Structured Types and Inheritance in SQL
14	Table Inheritance, Array & Multiset Types in SQL, Object Identity & Reference types in SQL
15	Implementing Object Relational features, Pros and Cons of OODBMS

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