# CSE202: OBJECT ORIENTED PROGRAMMING

| LECTURE NO. | TOPIC | COVERAGE |
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| 1 | Concepts and Basics of C++ Programming | Differences between procedural and object oriented programming paradigms, Features of Input/output Streams, Reading and writing data using cin and cout, Creating classes, Class objects, Accessing class members, Differences between Structures, Unions and Classes, Enumeration, Inline and Non-inline member functions, Static data members and static member functions. |
| 2 | Functions | Functions with Default parameters/arguments, Inline Functions, Manipulators Functions, Function overloading and Scope rules, Friend of a class (friend function and friend class), Reference variables, Differences between Call by value, Call by address and call by reference, Recursion(Function, Member Function). |
| 3 | Pointers and References | Differences between pointer and reference variables, Void pointer, Pointer arithmetic, Pointer to pointer, Possible problems with the use of pointers - Dangling pointer, Wild pointer, Null pointer assignment, Classes containing pointers, Pointer to objects, this pointer, Pointer to a member |
| 4 | Arrays and Strings | Array declaration and processing of multidimensional arrays(inside main and inside class), Array of objects, The Standard C++ string class-defining and assigning string objects, Member functions, Modifiers of string class. |
| 5 | Constructors, Destructors | Manager Functions Default constructor, Parameterized constructor, Copy constructor, Initializer lists, Constructor with default arguments, Destructors. |
| 6 | Data File operations | Opening and closing of files, Modes of file, File stream functions, Reading/Writing of files, Sequential access and random access file processing, Binary file operations, Classes and file operations, Structures and file operations |
| 7 | Operator Overloading | Operator Overloading unary operator, binary operator overloading |
| 8 | Type Conversion | Type conversions - basic type to class type, class type to basic type, one class to another class type. |
| 9 | Inheritance | Inheritance Basics – derived class and base class, Types (simple, multi-level, multiple and hierarchical), Modes (private, protected, public inheritance), Overriding member functions, Order of execution of constructors and destructors, Resolving ambiguities in inheritance, Virtual base class. |
| 10 | Dynamic Memory Management | Dynamic memory allocation using new and delete operators, Memory leak and allocation failures |
| 11 | Polymorphism | Compile and run time polymorphism, Virtual functions, Pure virtual |

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| | | functions, virtual destructor, Abstract classes and concrete class , Self-Referential class, Early binding and late binding, Dynamic constructors. |
| 12 | Exception Handling | Basics of exception handling, Exception handling mechanism, Throwing mechanism, Catching mechanism, Rethrowing an exception |
| 13 | Templates | Function template and class template, Inheritance in template class(single level) |
| 14 | Standard Template Library (STL) | Introduction to STL- Containers, Algorithms and iterators, Container - Vector and List. |