OE-EC604C

Object Oriented Programming

3L:0T:0P

3 credits

paradigm: Evolution of programming paradigm, structured versus object-oriented development, Introduction to Object oriented programming concepts: Objects, classes, encapsulation and abstraction, inheritance, polymorphism, dynamic binding, message passing. Moving from C to C++: Introduction to C++, streams based I/O, name space, scope resolution operator (::), variable declaration at the point of use, variable aliases-reference variables, strict type checking, parameter passing by reference, inline function, function overloading, default arguments. Object and Classes: Specifying and using classes, access specifies: private, public, functions and data members, default arguments, function overloading, friend functions, static members. Objects: memory considerations for objects, new and delete operators. Constructors - default constructor, parameterized constructor, constructor with dynamic allocation, copy constructor, destructors. Operator overloading- overloading through friend and member functionsBinary operators: arithmetic, relational, assignment , insertion, extractionUnary operators: unary minus , post and pre-increment, post and pre- decrement, Conversion functions : class to basic, basic to class, class to class. Inheritance: Derived and base classes, Class hierarchies, public, private, and protected derivations, constructors in derived classes, destructors in derived classes, constructors invocation and data members initialization in derived classes, classes within classes, virtual base class. Polymorphism: Pointer to objects, pointer to derived class object, this pointer, run time and compile time polymorphism, virtual functions, pure virtual functions, abstract class, virtual destructor. Files and Streams: Introduction to file handling, hierarchy of file stream classes, opening and closing of files, file modes, file pointers and their manipulators, sequential access, random access. Exception handling and Templates : Introduction to exception handling, throw point outside try, Multiple catch, Catch-all, throwing objects. Introduction to templates, class templates, function templates

Text Book 1. Object Oriented Programming with C++, E. Balaguruswamy, 6th Edition, 2013 TMG Hill.Object Oriented Programming with C++, Reema Thareja, OXFORD University Press, 1st Edition, 2015. 2. C++ completes reference, Herbert Schildt, TMG Hill, 4th Edition, 2002. 3. C++ How to Program, Deitel and Deitel, Pearson Education Asia, 8th Edition, 2011. 4. Object Oriented Programming with Ansi and Turbo C++, Ashok N Kamthane, Pearson Education, 1stEdition, 2003. 5. Object-Oriented Programming in C++, Robert Lafore, CourseSams Publishing, 4th Edition Course

Outcome: At the end of the course, the students will be able to : 1. differentiate between structures oriented programming and object oriented programming. 2. use object oriented programming language like C++ and associated libraries to develop object orientedprograms. 3. understand and apply various object oriented features like inheritance, data abstraction, encapsulation andpolymorphism to solve various computing problems using C++ language. 4. apply concepts of operator-overloading, constructors and destructors. 5. apply exception handling and use built-in classes from STL.