ADE100 : Object Orientation

Code : ADE100 **Duration :** 1 day **Category :** Analysis and Design

Audience :

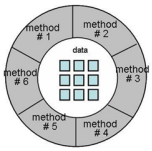
This course is aimed at individuals who want to become familiar with the basic concepts of object-oriented system development.

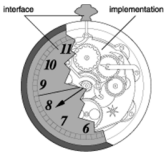
Prerequisites :

To join this course is no specific skills or knowledge is required. General knowledge of system design is helpful to a proper understanding.

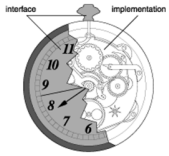
Realization :

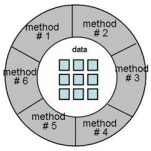
The theory is treated on the basis of presentation slides. Demos and exercises are used to illustrate the theory. The course material is in English.





Object Orientation





Contents :

This course covers the basic concepts of object orientation such as objects, classes, messaging, encapsulation, polymorphism and abstraction. After an introduction explaining the path that led to object orientation, it is discussed what classes are, how objects can be instantiated from classes and how responsibilities for data storage and processing can be assigned to classes. Also well known object oriented concepts like encapsulation, inheritance, polymorphism, interfaces and abstract classes are explained and demonstrated. The relationships that may exist between classes like associations, aggregations and composition are discussed. Finally, attention is paid to the standard methods and techniques of object oriented system design and modeling with UML.

Module 1 : Intro Object Orientation

Characteristics of Software
Software Crisis
Object Oriented Paradigm
Object Orientation in Software Process
Domain Analysis
Requirements Gathering
Use Case Analysis
Use Case Diagrams
Object Orientation in Software Design
Objects as Domain Concepts
Objects as Program Concepts
Reusability
Object Oriented Programming Paradigm
Unstructured Programming
Procedural Programming
Object Oriented Programming

Module 2 : Classes and Objects

Abstraction
Abstraction in Object Orientation
Procedural versus OO View
Objects
Classes
Instance variables
Methods and Operations
Class or Instance?
Identifying Classes
Identifying Attributes
Assign Responsibilities to Classes
Identifying Operations
Prototyping on paper
CRC Cards
Constructors
Creating Objects
Using Objects
Creating Objects
Using Objects

Module 3 : Object Oriented Concepts

Object Orientated Concepts
Other Key Concepts
Encapsulation
Access Control
Class Fields and Methods
Inheritance
Inheritance Hierarchy
Is a rule
Method Overloading
Method Overriding
Polymorphism
Polymorphism Example
Abstract Classes
Interfaces
Interface Implementation
Dynamic Binding

Module 4 : Object Oriented Modeling

Object Oriented Modeling with UML
UML Diagrams and Views
Static Modeling
Class Diagram
Generalizations
Avoid Unnecessary Generalizations
Associations
Identifying Associations
Aggregation
Composition
Object Diagrams
Associations versus Generalizations
Interfaces
Dynamic Modeling
Interaction Diagrams
Sequence Diagrams