| Course Code | Course Name | Credits |
|---|---|---|
| 20MCACC202 | Object Oriented Programming using Java | 3 |

## ❖ Aim of the Course:

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|---|---|
| 1 | The aim of this course is that students will be understanding Object oriented concept with respect to Java programming language. Also, student will learn core java fundamental which help them in future to learn any object-oriented programming language and android mobile application development. |

## ❖ Course Overview and Context:

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|---|---|
| 1 | The course is divided into five units. The first unit covered object-oriented programming concept and also covered class and object. Second unit is for design and covered the concept of Inheritance, Packages & Access Specifier, Understanding commonly used classes of java.lang package. Third unit covered the concept of Exception Handling, Nested Classes, Collection Framework and Regular expression. Four unit covered the concept of File Handling, Multithreading and fifth unit covered the concept of java database connectivity. |

## ❖ Course Outcomes:

| Sr # | Course Outcome | Cognitive Level |
|---|---|---|
| 1 | Understand the concept of Object-oriented programming with class and object | Remember |
| 2 | Understand Inheritance and common classes of lang package | Remember |
| 3 | Understand Exception Handling, Nested class and collection framework | Understand Appy |
| 4 | Understand File Handling and Multithreading | Understand Appy |
| 5 | Understand Database connectivity concepts | Understand Apply |

## ❖ Content of the Course:

### Unit-1 Introduction to OOP's, Understanding and defining of Classes and Objects

- What is OOP, Difference between Procedural and Object-oriented programming, Basic OOP concept - Object, classes, abstraction, encapsulation, inheritance, polymorphism, History of Java, Features of Java, JDK Environment, Java Virtual Machine
- Define class with instance variables and methods, Object creation of class, accessing member of class, Argument passing, Constructors, Method overloading, static data, static methods, static blocks, this keyword

### Unit-2 Inheritance, Packages & Access Specifier, Understanding commonly used classes of java.lang package.

- Super class & subclass, Abstract method and classes, Method overriding, final keyword, super keyword, implementing interfaces, User defined interfaces
- Importing classes, User defined packages, Modifiers & Access control (Default, public, private, protected)
- Object class & String class, Wrapper classes, understanding pass by value and pass of reference, Comparable and Comparator interface

### Unit-3 Exception Handling, Nested Classes, Collection Framework and Regular expression

- Discuss the purpose of Exception Handing in Java, Explain the types of exception in Java, Describe the use of try and catch, Explain the use of throws and throw, Describe the finally keyword
- Member Inner class, Local Inner class, Nested Interface, Nested Class: What and Why? Anonymous Inner class, static nested class, enum
- Collection, Set & List Interface with sub classes and interfaces, Map interface, Generic Collection framework, Pattern and Matcher, Varargs

### Unit-4 File Handling, Multithreading

- Read and Write data into file with OutputStream, InputStream, Reader and Writer classes and its sub classes, Bridge classes
- Describe Multithreading, Creating and Managing Threads, Discuss the life cycle of threads, Understand the concept of synchronization, explain how to set the priorities of thread, understand what a daemon thread does

### Unit-5 Java Database Connectivity

- JDBC Drivers, Connectivity with different database, Connection interface, Result Set interface, Result Set Meta Data, steps to connect to the database, Driver Manager, Statement interface, Prepared Statement

## ❖ Learning Resources:

| Sr # | Textbook \| References \| Internet Links |
|---|---|
| **1.** | Pravin Jain, "The class of Java" Pearson Education, (2010). |

## ❖ Assignments (Optional):

| Sr # | Description | Available From (Date) | Submission Date |
|---|---|---|---|
| **1.** | Basic of OOP, class, object and Inheritance | 3 weeks | Within 10 Days |
| **2.** | Access specifier, Exception handling, Nested class, collection framework | 6 weeks | Within 7 Days |