



## Course Weekly Outline

Week	Topics Covered	Lab Experiments Assignments
1	<ul style="list-style-type: none"> <li>* Programming Paradigms               <ul style="list-style-type: none"> <li>- Non structured (unstructured) Programming ,</li> <li>- Procedural Oriented Programming</li> <li>- Modular Programming</li> </ul> </li> </ul>	<p>Introduction to imperative and strictly typed programming in Java.</p> <p>Data types, variables, expressions and arithmetic.</p>
2,3	<ul style="list-style-type: none"> <li>* Introduction to OOP               <ul style="list-style-type: none"> <li>- Class notation and definition (with graphical examples)</li> <li>- A comparison among programming paradigms</li> <li>- Class relation types ( is a , type of )</li> </ul> </li> </ul>	Data types, arrays
4	<ul style="list-style-type: none"> <li>* OOP concepts               <ul style="list-style-type: none"> <li>- Abstraction concept and abstract data type</li> <li>- Data hiding concept</li> </ul> </li> </ul>	<p>Control statements</p> <p>Variables and reference types</p>
5	<ul style="list-style-type: none"> <li>- Encapsulation concept</li> <li>- Reuse concept</li> <li>* Class definition using Java               <ul style="list-style-type: none"> <li>- Class body</li> <li>- Methods (operations) within class</li> <li>- Examples</li> </ul> </li> </ul>	<p>Rectangle class, Point class, Triangles class, circle class, date class, student class and person class</p>
6	<ul style="list-style-type: none"> <li>* Creating objects Access               <ul style="list-style-type: none"> <li>- attributes</li> <li>- Access methods</li> <li>- Examples</li> </ul> </li> </ul>	<p>Rectangle class, Point class, Triangles class, circle class, date class, cube class and person class (with constructors)</p>
7	<ul style="list-style-type: none"> <li>* Constructor and destructor methods Definition               <ul style="list-style-type: none"> <li>- Access type</li> </ul> </li> </ul>	
8	<ul style="list-style-type: none"> <li>* Private, and public               <ul style="list-style-type: none"> <li>- Examples</li> <li>-</li> <li>-</li> </ul> </li> </ul>	
9	<ul style="list-style-type: none"> <li>* Polymorphism concepts first part               <ul style="list-style-type: none"> <li>- Method Overloading</li> <li>- Constructor Overloading</li> </ul> </li> </ul>	General applications
10	<ul style="list-style-type: none"> <li>* Array of objects               <ul style="list-style-type: none"> <li>- Examples</li> </ul> </li> </ul>	

11	<ul style="list-style-type: none"> <li>* Strings</li> <li>- Declaration and Initialization</li> </ul>	Sorting a list of names alphabetically
12	<ul style="list-style-type: none"> <li>- Reading and printing</li> <li>- Processing (sorting, searching, concatenating, ... etc)</li> <li>- String as the method parameters and return values</li> <li>- Examples</li> </ul>	Replace each upper case letter by lower case letter and vice versa
13	<ul style="list-style-type: none"> <li>* - Inheritance Inheritance types</li> </ul>	Student class inheritance from person class
14	<ul style="list-style-type: none"> <li>- Constructor methods in subclass</li> <li>- Two layers Inheritance</li> <li>- Protected Access type</li> </ul>	Rectangle class inheritance from Polygon class
15	<ul style="list-style-type: none"> <li>* Polymorphism concepts second part Method overloading (in subclass)</li> <li>- Method overridden</li> <li>- Abstract Method</li> </ul>	
16	<ul style="list-style-type: none"> <li>* Abstract Class Definition</li> <li>- Examples</li> <li>-</li> </ul>	
17,18	<ul style="list-style-type: none"> <li>* Multiple Inheritance concepts</li> <li>- Interface definition</li> <li>- Examples</li> </ul>	Student class that inheritance from person and date classes
19,20	<ul style="list-style-type: none"> <li>* Polymorphism concepts third part</li> <li>- Static and dynamic binding</li> <li>- Examples</li> </ul>	Real application ... Motive class
21,22	<ul style="list-style-type: none"> <li>* Static class and members</li> <li>- Static attributes</li> <li>- Static methods</li> <li>- Static class</li> <li>- Examples</li> </ul>	General applications
23	<ul style="list-style-type: none"> <li>* Special java keywords</li> <li>- This keyword in java</li> <li>- Super keyword in java</li> <li>- Final keyword in java</li> <li>- Examples</li> </ul>	General applications
24,25	<ul style="list-style-type: none"> <li>* Math class and Number types class -</li> <li>- Math methods</li> <li>- Number (Integer, Float, ..., etc) methods</li> <li>- Examples</li> </ul>	Computing series Reading data from K.B
26,27, 28	<ul style="list-style-type: none"> <li>* Nested Classes, and Other Details</li> <li>- Nested Classes</li> <li>- Anonymous Inner Classes</li> <li>- Mixing Static and Non- Static Import</li> <li>* Enums as Classes</li> <li>- Java Packages</li> <li>- Examples</li> </ul>	Cylinder class that has circle object Class defined within another class Creating package
29,30	<ul style="list-style-type: none"> <li>* Other Java properties for OOP</li> </ul>	General applications