

Name of the Programme: MCA

Course code: CSA-501

Title of course: Object Oriented Concepts

Number of credits: 2 (2L-0T-0P)

Effective from AY: 2022-23

<u>Prerequisites for the course</u>	Knowledge of Programming using any Programming Language	
<u>Objectives</u>	Aim of this course is to introduce the learner to the object oriented paradigm.	
<u>Content</u>	Classes and objects Programming paradigm; procedural to object oriented Class; attributes & methods; classes as modules & types; uniform type system, wrapper type classes Object; object references; objects instantiation & interaction; constructor & destructor; pass-by-reference & pass-by-value Object copying & cloning; composite objects Static & non-static members Enumeration & Annotations	8 hours
	Object oriented principles Encapsulation Inheritance; types of inheritance; diamond problem Abstraction; virtual methods Polymorphism; overloading and overriding	8 hours
	Object oriented features Interfaces Access modifiers Errors & Exceptions; user-defined exceptions Collections Anonymous & Inner classes Type parametric polymorphism (e.g. Generics in Java & Templates in C++)	8 hours
	Advanced features Persistence & Serialization; JSON User packages & custom libraries; reflection Predicates & streams Lambda functions	6 hours
<u>Pedagogy</u>	Hands-on assignments / tutorials / peer-teaching / flip classroom. Concepts can be explained using UML class diagrams.	
<u>References/ Readings</u>	Main Reading 1. Timothy Budd, "An Introduction to Object Oriented Programming", Pearson Education, 3rd Edition 2. Brett D. McLaughlin, Gary Pollice & David West, "Head First Object-Oriented Analysis Design", O'Reilly 3. Ken Arnold, James Gosling, David Holmes, "The Java Programming Language", Addison-Wesley Professional 4. Stanley Lippman, "C++ Primer", Addison Wesley 5. Cay S. Horstmann, "Core Java Volume I—Fundamentals", Pearson 6. Herbert Schildt, "Java: The Complete Reference", Oracle Press 7. Joshua Bloch, "Effective Java", Addison Wesley 8. Kathy Sierra & Bert Bates, "Head First Java", O'Reilly 9. Bjarne Stroustrup, "The C++ Programming Language", Addison Wesley 10. https://www.tutorialspoint.com/java/index.htm	
<u>Course</u>	1. Learner will appreciate mapping real-world scenarios in the	

<u>Outcomes</u>	object-oriented world 2. Learner will understand object-oriented principles 3. Learner will be able to design object oriented softwares 4. Learner will be able to analyse a given problem and breakdown into logical units and solve via a bottom-up approach	
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