AMITY UNIVERSITY

UTTAR PRADESH

Course Title: **OBJECT ORIENTED SYSTEM DESIGN**

Course Level: **UG**

Credit Units: **03**

Course Code: **CSE431**

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
3	-	-	-	3

Course Objectives:

The purpose of this module is to acquaint students with key aspects of object-oriented principles and systems modelling. It also aims to give students skills in the use of appropriate tools and familiarity with techniques applied at different stages of the software development lifecycle.Object oriented concepts have been the backbone of software solution design across platform such as embedded, internet and business solution. Over the years the market is growing stronger and bigger size. Meanwhile, the need for reliable and scalable software solution design is ever-increasing. Hence, the skilled professionals with good foundation of object oriented concepts are needed to fulfill the ever increasing requirements.

Pre-requisites:

Object oriented programming, SoftwareEngineering,Software Project Management.

Course Contents/Syllabus:

	Weightage (%)
Module I : Object Oriented Design Introduction to OOSD – What is OOSD? – What is UML? What are the Unitedprocess(UP) phases - Case study – the NextGen POS system, Inception -Use caseModeling - Relating Use cases – include, extend and generalization.	**20**
Module II: Systems modelling using the object oriented approach and UML Elaboration - Domain Models - Finding conceptual classes and description classes – Associations – Attributes – Domain model refinement – Finding conceptual class hierarchies- Aggregation and Composition- UML activity diagrams and modeling, Scenario based examples for system modelling using object oriented approach.	**20**
Module III:Diagrams System sequence diagrams - Relationship between sequence diagrams and use cases Logical architecture and UML package diagram – Logical architecture refinement - UML class diagrams - UML interaction diagrams.	**20**

Module IV : Object Oriented System Design	**20**
Design Issues, Unified Approach to design, Partitioning of analysis model, Concurrency and subsystem allocation, task management component. User interface component, Data management component, Resource management component, Inter-subsystem, Communication, Object description, Data structure, Component and interfaces, Design Patterns and reuse, Elaboration and implementation of Use cases Class, Object collaboration, Interaction, STD diagram etc.	
Module V: GRASP and UML	**20**
GRASP: Designing objects with responsibilities – Creator – Information expert – Low Coupling –Controller – High Cohesion – Designing for visibility - Applying GoF design patterns – adapter, singleton, factory and observer patterns. UML state diagrams and modeling - Operation contracts- Mapping design to code -UML deployment and component diagrams	

Student Learning Outcomes:

Upon completion of this module, students will be able to:

1. Understanding the concept of visual modelling using UML.
2. Use a CASE tool to construct appropriate analysis / design diagrams addressing a clearly defined problem
3. Analyse and design a computer-based solution to a clearly defined problem using object oriented techniques

Pedagogy for Course Delivery:

- Presentations using Audio/ Video aids to explain the concepts of the module.
- Interactive Class Lectures (Supplementary material and Text books are provided).
- Online demonstration of all the practical components.
- Practice session will be set for demonstration purpose.

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total
100%	**-**	**100**

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	**Attendance**	**Class Test**	**Assignment**	**Case Study**	
Weightage (%)	5	10	7	8	70

TEXT BOOK:

1. CraigLarman,"Applying UML and Patterns: An Introduction to object-oriented Analysis and Design and iterative development", Third Edition, Pearson Education, 2005

REFERENCES:

1. Mike O'Docherty, "Object-Oriented Analysis & Design: Understanding System Development with UML 2.0", John Wiley & Sons, 2005.
2. James W- Cooper, Addison-Wesley, "Java Design Patterns – A Tutorial", 2000.
3. MichealBlaha, James Rambaugh, "Object-Oriented Modeling and Design with UML", Second Edition, Prentice Hall of India Private Limited, 2007
4. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides,"Design patterns: Elements of Reusable object-oriented software", Addison-Wesley, 1995.