PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science & Engineering

SYLLABUS FOR 3rd Sem BTech PROGRAMME

Object Oriented Concepts and UML (203105207)

Type of Course: BTech

Prerequisite: Concepts of Object-Orientation

Rationale: This course is designed to provide the deep concept of Object-Oriented system analysis and design. OO methodology employs international standard Unified Modeling Language (UML) fromthe Object Management Group (OMG). UML is a modeling standard for OO analysis and design which has been widely adopted in the IT industry.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
3	0	0	3	60	-	20	20	-	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**UNIT-1**: **Introduction**: About Object Orientated Technology, Development and OOModeling History, Introduction to UML, Features of Object-oriented concepts. **Modeling Concepts**: Introduction to Model, Modeling design Technique, Three models, Class Model, State model and Interaction model.	20%	8
2	**UNIT-2**: **Class Modeling**: Object and class concepts, link and association, Generalization and Inheritance, Advanced class modeling- Aggregation, Composition, Abstract class and concrete class, metadata, constraints. **State Modeling**: Event, state, Transition and conditions, state diagram, state diagram behavior, concurrency, Relation of Class and State models.	25%	12
3	**UNIT-3**: **Interaction Modeling**: Use case Models, sequence models, activity models	15%	4

4	**UNIT-4**: **Analysis and Design**: Development Life cycle, Development stages, Domain Analysis-Domain class model, domain state model, domain interaction model, Iterating and analysis. Application Interaction model, Application class model, Application state Model, Adding operation.	15%	6
5	**UNIT-5**: **SystemDesign**: Estimating Performance, making a reuse plan, breaking system into subsystems, identifying concurrency, allocation of subsystems, management of data storage, Handling Global resources, choosing a software control strategy, Handling boundary condition, common Architectural style.	15%	6
6	**UNIT-6**: **Class design**: Overview of class design, designing algorithms recursing downward, refactoring, design optimization, Adjustment of Inheritance, Reification of Behavior, Design pattern: introduction and classification, case study of model view controller(MVC).	10%	6

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Object oriented Modeling and Design (TextBook)
   Michael Blaha and James Rambaugh.
2. Object Oriented Analysis Design and Implementation
   Brahma Dathan, SarnathRamnath
3. Object Oriented Design with Applications
   Grady Booch
4. Design Patterns - Elements of Reusable Object - Oriented Software
   E. Gamma et.al.

Course Outcome:

After Learning the course the students shall be able to:

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1. Recognize object-oriented technology features to the practical system analysis and design.
2. Identify Reuse Mechanisms & Use appropriate design patterns.
3. Prepare the UML analysis and design diagrams.
4. Name and apply some common object-oriented design patterns and give example of their use.