



IV Year-I Semester		T	P	C
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<b>UML AND DESIGN PATTERN (RT41052)</b>				

**Prerequisite Course:**

Object Oriented Analysis and Design

**Course Description and Objectives:**

The focus of this course is on design rather than implementation.

1. Introducing the Unified Process and showing how UML can be used within the process.
2. Presenting a comparison of the major UML tools for industrial-strength development.
3. Introduction to design patterns, practical experience with a selection of central patterns.

**Course Outcomes:**

Upon completion of the course, the student will be able to achieve the following outcomes.

Cos	Course Outcomes	POs
1	Discusses about Unified process, UML, design patterns and MVC architecture	9
2	Explain FURPS model, Use case model, Use case diagram and UP artifacts	8
3	Apply System Sequence Diagram and describe about Domain Model and	9
4	Explain some creational and behavioral design patterns	9
5	Discusses about various structural and behavioral UML diagrams	8
6	Apply various advanced relationships and describe about architecture and package modeling elements	11

**Syllabus:**

**Unit I: Introduction:** Introduction to OOAD; typical activities / workflows / disciplines in OOAD, Introduction to iterative development and the Unified Process, Introduction to UML; mapping disciplines to UML artifacts, Introduction to Design Patterns - goals of a good design, Introducing a case study & MVC architecture

**Unit II: Inception:** Artifacts in inception, Understanding requirements - the FURPS model, Understanding Use case model - introduction, use case types and formats, Writing use cases - goals and scope of a use case, elements / sections of a use case, Use case diagrams, Use cases in the UP context and UP artifacts, Identifying additional requirements, Writing requirements for the case study in the use case model

**Unit III: Elaboration:** System sequence diagrams for use case model, Domain model : identifying concepts, adding associations, adding attributes, Interaction Diagrams, Introduction to GRASP design Patterns ,Design Model: Use case realizations with GRASP patterns, Design Class diagrams in each MVC layer, Mapping Design to Code, Design class diagrams for case study and skeleton code

**Unit 4: More Design Patterns:** Fabrication, Indirection, Singleton, Factory, Facade, Publish-Subscribe

**Unit 5: More UML diagrams:** State-Chart diagrams, Activity diagrams, Component Diagrams, Deployment diagrams, Object diagrams

**Unit 6: Advanced concepts in OOAD:** Use case relationships, Generalizations  
Domain Model refinements, Architecture, Packaging model elements

**Textbooks:**

1. 'Applying UML and patterns' by Craig Larman, Pearson
2. Object-Oriented Analysis & Design with the Unified Process by Satzinger, Jackson & Burd Cengage Learning
3. 'UML distilled' by Martin Fowler , Addison Wesley, 2003

**References:**

1. O'reilly ' s 'Head-First Design Patterns' by Eric Freeman et al, Oreilly
2. UML 2 Toolkit, by Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: WILEY'-Dreamtech India Pvt. Lid.