

COURSE NAME : COMPUTER ENGINEERING GROUP
COURSE CODE : CM/IF
SEMESTER : SIXTH
SUBJECT TITLE : OBJECT ORIENTED MODELLING AND DESIGN (ELECTIVE-II)
SUBJECT CODE : 9166

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS.	TH	TEST	PR	OR	TW	TOTAL
02	--	04	3	80	20	-	25#	25@	150

Rationale:

Object oriented modelling and design presents an Object Oriented approach to software development. It is based on modeling objects from the real world and then using the model to built a language-independent design. This subject shows how to use Object Oriented concepts throughout the entire software life cycle, from analysis through design implementation by using different models. The graphical notation i.e. described in subjects helps the software developer to visualize a problem before going for implementation.

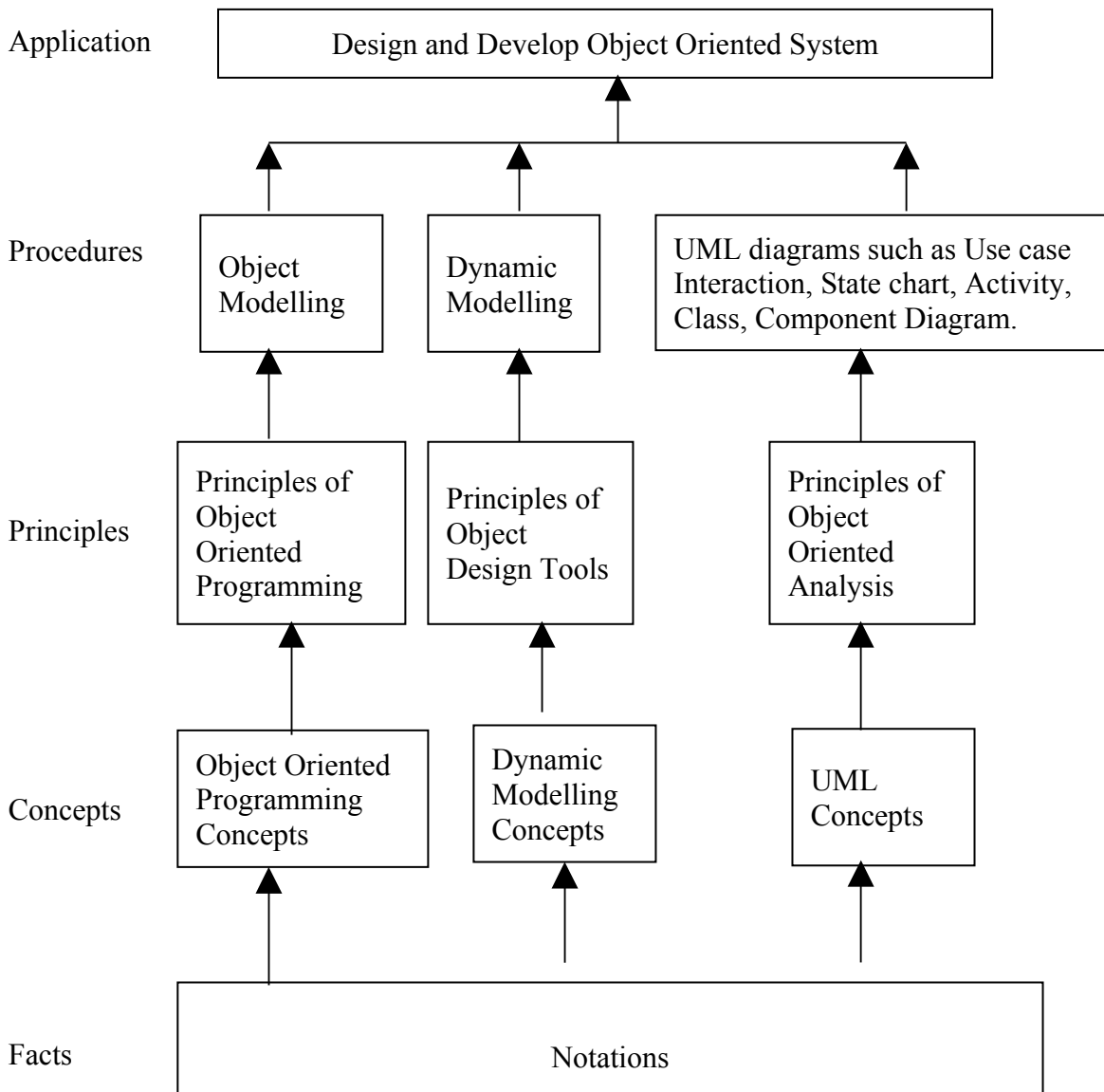
This subject will be useful for the student to understand the concepts of Object Oriented Programming System and to model these concepts using Unified Modelling Language (UML) for any application, before actually going for coding part.

Objectives:

The student will be able to:

- 1) Interpret / give the meaning of object-oriented concepts.
- 2) Understand different Modelling Methodology.
- 3) Prepare an object model for a given problem statement.
- 4) Prepare dynamic for a given problem statement.
- 5) Describe and Design the concepts of class diagram, object diagram, interaction diagram, sequence diagram collaboration, use case diagram, state diagram, activity.
- 6) Usage of anyone design tool.

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	Importance of Modelling 1.1 Brief overview of Object Modelling Technology (OMT) by Ram Baugh, Booch Methodology, Use Case driven approach (OOSE) by Jacobson, Overview of CRC card method by Cunningham.	03	08
02	Object Modelling 2.1 Objects and Classes (Object Diagrams, Attributes, Operations and Methods), Links, Associations and Advanced Concepts (General Concepts, Multiplicity, Link Attributes, Association as a Class, Roll names, Ordering, Qualification, Aggregation). 2.2 Generalizations and Inheritance, Grouping Constructs. 2.3 Aggregation versus Association And Generalization, Recursive Aggregates, and Propagation of Operations. 2.4 Abstract Classes, Multiple Inheritance, Metadata, Candidate Keys, Constraints 2.5 Introduction to Dynamic and Functional Modelling.	07	20
03	Overview of UML 3.1 Efforts of standardization / Integration,OMG approval for UML, Scope of UML, Conceptual model of UML,Architectural –Metamodel, Unified Software Development Lifecycle. 3.2 Introduction to UML Diagrams	05	14
04	UML – Structural Modelling 4.1 Advanced Class Diagrams: - Advanced Classes and Relationships, Interfaces, Types and Roles, Packages, Instances. Object Diagrams. 4.2 Component Diagrams: Terms and Concepts, Common modeling techniques. Deployment Diagrams: Terms and Concepts, Common modeling techniques.	05	16
05	UML Behavioral Modeling 5.1 Use case diagram: Terms and Concepts, Model ling techniques. 5.2 Interaction diagram (Sequence and collaboration diagram): Terms and Concepts, Model ling techniques. 5.3 State chart diagram: Terms and Concepts, Model ling techniques. 5.4 Activity diagram: Terms and Concepts, Modelling techniques.	12	22
Total		32	80

Practical:

Skills to be developed:

Intellectual skills:

Use of programming language constructs in program implementation.

- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
 - Problem definition
 - Analysis
 - Design of logic
 - Coding
 - Testing
 - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

- Proper handling of Computer System.

List of Practical:

1. Analyze and Design the UML diagrams for

- ATM System
- Railway Reservation System
- Library Management System.

Analyze and design the UML diagrams & develop programme for minimum three systems.

(For Developing Above three programmes entire time allotted to practical mention in the teaching Scheme (4 X 16 = 64 Hrs.) should be utilized.**Learning Resources:****1. Books:**

Sr. No.	Author	Title
1	Rumbaugh, Blaha	Object Oriented Modelling and Designing (Refer for First and Second Chapter)
2	Booch, Jacobson, Rumbaugh	The UML User Guide (Addison Wesley) (Refer for Third, Fourth and fifth Chapter)
3	Mark Paestly	Practical OOD with UML-- (Refer for Fourth and Fifth Chapter)

2. Web Sites:

- <http://uml.tutorials.trireme.com/>

- http://pigseye.kennesaw.edu/~dbraun/csis4650/A&D/UML_tutorial/
- <http://www.smartdraw.com/tutorials/software-uml/uml.htm>
- <http://www-db.stanford.edu/~burback/watersluice/node55.html>

Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students