CMP 321 Object Oriented Design and Modeling through UML (3-1-3)

Evaluation:

	Theory	Practical	Total
Sessional	30	20	50
Final	50	-	50
Total	80	20	100

Course Objectives:

- To explain and illustrate the fundamental concepts of object orientation
  To introduce basic concepts of object-oriented analysis and design.
- To study the main features of the software development process in an object-oriented framework.
- To provide exposure to Visual Object Oriented Modeling languages, specifically UML (Unified Modelling Language).
- To develop skills on verifying, and validating a given specification presented in UML
- To develop a specification and implementation using UML from a given system requirements description.

Course Contents:

1. Object Oriented Fundamentals **10 hrs**

1.1. Introduction
1.2. Object Oriented Analysis and Design
1.3. Defining Models
1.4. Case Study
1.5. Requirement Process
1.6. Use Cases
1.7. Object Oriented Development Cycle
1.8. Overview of the Unified Modeling Language: UML Fundamentals and Notations

2. Object Oriented Analysis **12 hrs**

2.1. Building Conceptual Model
2.2. Adding Associations and Attributes
2.3. Representation of System Behavior

3. Object Oriented Design **14 hrs**

3.1. Analysis to Design
3.2. Describing and Elaborating Use Cases
3.3. Collaboration Diagram
3.4. Objects and Patterns
3.5. Determining Visibility
3.6. Class Diagram

4. Implementation **9 hrs**

4.1. Programming and Development Process
4.2. Mapping Design to Code
4.3. Creating Class Definitions from Design Class Diagrams
4.4. Creating Methods from Collaboration Diagram
4.5. Updating Class Definitions
4.6. Classes in Code
4.7. Exception and Error Handling

Laboratory Exercises:

Laboratory Exercise will include implementing all the UML diagrams and handling a object oriented design and modeling activity in a ACSE Environment. UML pattern design and modeling will be taken up with the help of *Rational Studio 2000* or any other CASE tools.

Text Book:

Larman, C., *Applying UML and Patterns*, Pearson Education Asia, ISBN: 81-7808-336-1

References:

1. Stevens, P., Pooley, R., *Using UML: Software Engineering with Objects and Components*, Addision-Wesley, 1999, ISBN: 981-2359-15-X
2. Fowler, M., Scott, K., *UML Distilled: Applying the Standard Object Modeling Language*, Addison-Wesley, 1997, ISBN: 981-4053-59-7
3. Booch, G., Jacobson, I., Rumbaugh, J., *The Unified Software Development Process*,
   Addison-Wesely, 1998, ISBN: 981-235-873-0
4. Booch, G., Jacobson, I., Rumbaugh, J., *The Unified Modeling Language User Guide*,
   Addison-Wesely, 1998, ISBN: 981-4053-31-7
5. Jacobson I., *Object-Oriented Software Engineering – A Use Case Driven Approach*, ,
   Addison-Wesely, 1998, ISBN: 981235994X
6. Richter C., *Designing Flexible Object-Oriented Systems with UML*, Techmedia, 2000,
   ISBN: 81-7635-398-1
7. Booch, G., *Object-Oriented Analysis & Design*, Pearson Education Asia, 2000, ISBN:
   81-7808-156-3