



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA

Course Details

CS3003 OBJECT-ORIENTED SYSTEM DESIGN	L-T-P: 3-0-0, Credits: 3
SUBJECT NATURE	THEORY
FACULTY INSTRUCTOR	DR. SANJEEV PATEL

COURSE OBJECTIVES

1. To learn the concept of object-oriented software development process
2. To get acquainted with UML diagrams for analysis and design
3. To develop real-life object-oriented software

COURSE OUTCOMES

After reading this subject, student will be able to

- Understand object-oriented software development methodology.
- Apply object-oriented methodology to develop real-life projects

DESCRIPTION

This course will cover object-oriented approach to modeling, problem solving, requirement analysis, system design, database design, system engineering and software engineering.

LECTURE PLAN

Sr. No.	Course Description	Lecture
1	Software development activities, Systems development life cycle (SDLC), Software development process, Object-oriented systems development life cycle, building high quality software.	L1-L4
2	Feasibility analysis, Requirement determination, Software requirement specification.	L5-L6

3	Introduction to the principles of object-oriented programming, objects, classes, attributes, object behavior and methods, basic characteristics of object-oriented systems, Encapsulation and information hiding, inheritance, polymorphism, exception handling, and object-oriented containers.	L7-L14
4	Software design, function-oriented design, data flow diagrams, elements of data flow diagrams, creating data flow diagrams, structure chart.	L15-L18
5	Object oriented analysis, modeling and design using UML, use case driven analysis, Use case analysis, elements of a use case, unified modeling language, static and dynamic models, UML diagrams, behavioral or functional analysis/modelling use case diagrams.	L19-L22
6	UML static model or structural design, CRC modeling, UML class diagrams, packages, object relationships and associations, aggregations and object containment, case study, object identity, persistence.	L23-L26
7	UML dynamic modeling, sequence diagrams, state chart diagram, activity diagram, UML extensibility and UML meta model.	L27-L30
8	Object oriented data model, entity relationship diagram (ERD), elements of ERD, data dictionary and metadata, creating an ERD, validating an ERD.	L31-L34
9	Architectural design, user interface design, data storage design, analysis patterns, design patterns.	L35-L36

Book(s):

1. Rajib Mall, "Fundamentals of Software Engineering", 3rd edition, PHI, 2009
2. R.S. Pressman, "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw
3. Sommerville, "Introduction to Software Engineering", 8th Edition, Addison-Wesley, 2007
4. James Rumbaugh, Ivar Jacobson, Grady Booch, "The Unified Modeling Language Reference Manual", Second Edition, Addison- Wesley, 2004.
5. Grady Booch et al, Object-Oriented Analysis and Design with Applications, Addison Wesley, 2007.
6. Erich Gamma, Richard help, Ralph Johnson and John Vlissides, Design Patterns: Elements of Reusable Object-Oriented Software, 1st Edition, Addison Wesley.
7. Robert C. Martin, UML for Java Programmers, Prentice Hall.
8. Rumbaugh and Blaha, Object Oriented Modeling and Design with UML, Pearson.
9. Bernd Bruegge and Allen H Dutoit, Object-Oriented Software Engineering Using UML, Patterns, and Java, Pearson.
10. Bernd Oestereich, Developing Software with UML: Object-Oriented Analysis and Design in Practice, Addison Wesley.