International Islamic University Islamabad, Pakistan

Object Oriented Analysis and Design

Course Outline

Course Title: **Object Oriented Analysis and Design** Course Code**:**

Class: **BSSE/BSCS/BSIT** Credit Hours: **3**

Course Instructor: **Mr. Idrees Ahmad**

Course Description:

Object oriented analysis and design is a course that presents an introduction to the design and construction of software systems using techniques that view a system as a set of objects that work together to realize the system's functionality. This perspective stands in contrast to more traditional "procedural" or "structured" design techniques that viewed systems as a set of procedures that manipulate shared data structures. Proponents of object-oriented techniques point to the flexibility and extensibility of object-oriented systems along with other benefits such as increased modularity, abstraction, and encapsulation. In this class, we will examine fundamental object-oriented analysis and design techniques and show how decisions made during analysis and design impact the implementation of software systems. This class does not focus on object-oriented programming.

Objectives:

At the end of this course students will be able to:

- Develop a working understanding of formal object-oriented analysis and design processes.
- Develop the skills to apply OO Analysis and OO Design techniques to any given project.
- Develop an understanding of the risks inherent to large-scale software development.
- Learn (through experience!) techniques, processes, and artifacts that can mitigate these risks.
- Implement a pilot OO Application

Course Evaluation:

	%age	Marks
Assignments	10%	10
Quizzes	10%	10
Mid Exam	20%	20

Final Exam	60%	60
Total	**100%**	**100**

Textbooks:

- Craig Larman, Applying UML and Patterns, 2nd Edition.
- Head First Object-Oriented Analysis and Design 1st Edition by Brett D. McLaughlin, Gary Pollice, Dave West
- UML 2.0, Documentation://www.rational.com
- Course books would be shared in pdf format

CONTENTS

Week #	Theory Lectures	
Week 1	Lecture 1 , 2	• Feedback Session & Introduction to the course and course policies

Week 2	Lecture 1	• General discussion related to analysis and design
		• Discussion on different Software Engnieering topics
		  ○ Design
		  ○ Architecture
		  ○ OOP
		• Revise OOP concepts

	Lecture 2	• What is OOAD
Week 3	Lecture 1	• Use case modeling
	Lecture 2	• Use case modeling
Week 4	Lecture 1	• Exercise: Use case modeling
	Lecture 2	• System Sequence Diagrams

Week #	Theory Lectures	
Week 5	Lecture 1	• System Sequence Diagrams examples
	Lecture 2	• Domain Modeling
Week 6	Lecture 1	• Domain Modeling
	Lecture 2	• Exercise: Domain Modeling
Week 7	Lecture 1	• Operation Contracts
	Lecture 2	• Exercise: Operation Contracts
Week 8	Lecture 1	• Introducing Design
	Lecture 2	• Sequence Diagrams
Week 9	Lecture 1	• Interaction Diagrams
	Lecture 2	• Exercise: Interaction Diagrams
Week 10	Lecture 1	• Class Diagrams
	Lecture 2	• Exercise: Class Diagrams
Week 11	Lecture 1, 2	• GRASP Patterns
Week 12	Lecture 1,2	• UML Diagrams
Week 13	Lecture 1	• Package Diagrams
	Lecture 2	• Component diagrams
Week 14	Lecture 1	• Deployment diagrams
	Lecture 2	• Activity diagrams
Week 15	Lecture 1, 2	• Project Presentations