Object-Oriented Analysis and Design
Course Outline (Fall 2018)

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Office Hours: Tuesday / Thursday 12:30 PM – 01:30 PM

Objective

This course discusses in detail object-oriented development concepts and their application to the solution of real-life software development problems with a thorough coverage of analysis and modeling techniques and an introduction to design patterns. After studying this course, the students will be able to:

- Understand OO concepts and their application in different phases of the software development lifecycle
- Construct OO models of real-world applications using UML
- Translate OO models to code using an OO programming language
- Design elegant programs using the concepts of design patterns

Prerequisites Data Structures

Course Outline

Topic	Lectures
Object-Oriented Concepts	
Introduction	1
Classes, Objects and Associations	2
Inheritance & Polymorphism	3
Multiple Inheritance, Interfaces and applications to Generic Programming	2
Serialization & Persistance	2
Object-Oriented Analysis & Design	
Software Development Lifecycle	1
Usecase Analysis	2
Analysis Techniques, CRC Modeling, Sequence and State Diagrams	4
Design Principles and Practices	3
Design Patterns	
Introduction to Design Patterns	1
Creational: Factory Method and associated patterns	2
Structural: Composite Pattern	1
Behavioral: Observer Pattern	1
Case study and Miscellaneous topics	3

Assessment

Assignments/Quiz(s)/Homeworks	10%
Projects	20%
Midterms	30%
Final Exam	40%

Reference Material

- Object-Oriented Analysis and Design with Applications, Grady Booch et. al., 3rd Edition, Pearson, 2007
- Object-Oriented Modeling and Design with UML, Michael Blaha and James Rumbaugh, 2nd Edition, Pearson, 2005
- Design Patterns: Elements of Reusable Object-Oriented Software, Erich Gamma et. al, Pearson, 1995