

FAST NUCES – Fall 2022 – CS441: Design Defects and Restructuring – Course Outline

Last Updated: 27th Aug 2022

Credit Hours: 3 Credit Hours

Instructor: Rahim Hasnani

Class Schedule: Saturdays 9-12 (CS) & 12-3 (SE)

Course Objectives

The objective of the course is to provide a comprehensive knowledge of object-oriented design, study of common design patterns and gain knowledge about when/how to apply them. In addition, the course also provides introduction to refactoring and how to carry out refactoring.

For detailed course objects, see Spring 2022 NCAEC Course Description document that will be shared separately.

Course Pre-Requisites

As per last NCAEC course description: Software Engineering, Object Oriented Analysis & Design

The following is required/expected:

- Comprehensive knowledge of an Object-Oriented Programming Language
- UML

Grading Scheme (Subject to Approval)

Final	40%
Midterm(s)	30%
Quizzes	10%
Assignment	10%
Project	10%

Text/Reference

- Design Patterns, Elements of Reusable Object-Oriented Software by Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides
- Refactoring: Improving the Design of Existing Code by Martin Fowler, Kent Beck (Contributor), John Brant (Contributor), William Opdyke, don Roberts

Course Outline

Week # & Date	Topics	Notes
1: 27-Aug	Introduction OOP Constructs OOD Recap	
2: 3-Sep	Design Patterns: GOF	Assignment 1 out
3: 10-Sep	Architecture Patterns More GOF Design Patterns	Assignment 1 due
4: 17-Sep	MVC, SOC More GOF Design Patterns	Assignment 2 out
5: 24-Sep	Mid 1 Repository Pattern, Dependency Injection	Assignment 2 due
6: 1-Oct	Refactoring & Code Smells More GOF Design Patterns	Assignment 3 out
8-Oct: 12 Rabi-ul-Awwal*		
7: 15-Oct	Refactoring Tools available in popular IDEs More GOF Design Patterns	Assignment 3 due
8: 22-Oct	TDD & Testing Automation Refactoring Techniques	Assignment 4 out
9: 29-Oct	Refactoring Techniques	Assignment 4 due
10: 29-Oct	.NET/C# patterns	Assignment 5 out
11: 5-Nov	Mid 2	Assignment 5 due
12: 12-Nov	Remaining patterns	
13: 19-Nov	Refactoring Techniques	
14: 26-Nov	Applying Patterns	
15: 3-Dec	Applying refactoring	Project Due