COURSE DESCRIPTION FORM

INSTITUTION FAST-NU

PROGRAM (S) TO BE EVALUATED BS Computer Science

A. Course Description

(Fill out the following table for each course in your computer science curriculum. A filled out form should not be more than 2-3 pages.)

Course Code	CS441
Course Title	Design Defects and Restructuring
Credit Hours	3+0
Prerequisites by Course(s) and Topics	Software Engineering, Object Oriented Analysis & Design
Assessment Instruments with Weights (homework, quizzes, midterms, final, programming assignments, lab work, etc.)	Midterm examination 30% Final term examination 40% Quizzes 10% Assignment 10% Project 10%
Course Coordinator	Engr. Abdul Rahman Mahmood
URL (if any)	http://slate.nu.edu.pk/portal/site/KHICS441SPRING2019CS
Current Catalog Description	The course focuses on studying a large number of general design patterns and their practical application. Furthermore, some patterns and idioms (language specific techniques) meant for real-time systems will be provided. The course includes the following contents: General design patterns, specific patterns for technical real-time systems, deep understanding of the thoughts behind design patterns, classification of patterns, orientation around other types of patterns, Revision of Object Oriented Design, Design Principles (SOLID Principles), Design by Contract, Design Patterns (from Gang of Four) – 23 Patterns, more Popular Design Patterns (such as MVC), Refactoring Techniques
Textbook (or **Laboratory Manual** for Laboratory Courses)	1) **Design Patterns, Elements of Reusable Object-Oriented Software** by Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, 2012. 2) **Refactoring: Improving the Design of Existing Code** by

	Martin Fowler, Kent Beck (Contributor), John Brant (Contributor), William Opdyke, don Roberts
Reference Material	1) **Applying UML and Patterns**, 3rd Edition, By Craig Larman
Course Goals	By the end of this course, students will: • Have a deeper knowledge of the principles of object-oriented design • Understand the design patterns that are common in software applications • Understand how these patterns related to object-oriented design • Use refactoring to facilitate adding new functionality to system • Use refactoring to improve design • Refactor existing applications to make them more maintainable • Recognize when and when not to refactor • Identify and choose the appropriate type of refactoring technique to solve specific problems
Topics Covered in the Course, with Number of Lectures on Each Topic (assume 15-week instruction and one-hour lectures)	See course log attachment.
Laboratory Projects/Experiments Done in the Course	Students will be identifying design problems in existing codes and have to apply applicable design patterns along with refactoring techniques.
Programming Assignments Done in the Course	2

Class Time Spent on (in credit hours)	**Theory**	**Problem Analysis**	**Solution Design**	**Social and Ethical Issues**
	1	1	1	

Oral and Written Communications	Every student is required to submit at least 2 written reports of typically 5 pages and to make 1 oral presentations of typically 20 minute's duration. Include only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy.

Instructor Name _Engr. Abdul Rahman Mahmood_

Instructor Signature _____

Date __**January 20, 2020**_____