

**ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD**  
**(Department of Computer Science)**

**WARNING**

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

**Course: Software Engineering-I (3414)**

**Level: BS (CS)**

**Semester: Autumn, 2013**

**Total Marks: 100**

**Pass Marks: 40**

**ASSIGNMENT No. 1**  
**(Units 1–4)**

*Note: All questions are compulsory. Each question carries equal marks.*

- Q.1 a) Define software with the help of suitable examples? Also elaborate software characteristics?  
b) Explain the role of software in detail?
- Q.2 a) Is it possible to combine process models? If so, provide an example.  
b) What process adaptations are required if the prototype will evolve into a deliverable systems or product?
- Q.3 Suppose you are a software engineer in a company and your boss give you a software project of automobile companies (that make cars and bikes) which model you can choose to develop this software project. State your answer with the help of a sample case study.
- Q.4 You have been appointed a project manager within an information systems organization. Your job is to build an application that is quite similar to others your team has built, although this one is larger and more complex. Requirements have been thoroughly documented by the customer. What team structure would you choose and why? What software process model(s) would you choose and why?
- Q.5 Explain software engineering approaches with the help of suitable examples if possible and also write a comparison between different software engineering approaches?

## **ASSIGNMENT No. 2**

**(Units 5–8)**

**Total Marks: 100**

**Pass Marks: 40**

*Note: All questions are compulsory. Each question carries equal marks.*

- Q.1 Explain Software Specification with the help of suitable examples if any? Also elaborate Specification Review?
- Q.2 a) Elaborate data modeling with the help of suitable examples if any?  
b) Write a comparison between Functional modeling and Behavioral modeling?
- Q.3 Draw 1<sup>st</sup> level DFD (Data Flow Diagram) and ERD (Entity Relationship Diagram) diagrams for a network based course registration system for any university?
- Q.4 a) Define Data dictionary? Explain its role in DBMS?  
b) Explain Effective Modular Design in Detail?
- Q.5 Explain Design Concepts with the help of suitable examples?
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### **3414 Software Engineering-I**

**Credit Hours: 4 (4 + 0)**

**Recommended Book:**

**Software Engineering 5<sup>th</sup> Edition by Roger Pressman**

**Course Outlines:**

**Unit 1: Introduction**

Introduction to Software, Role of Software, Characteristics of Software, Need for Software, Introduction to Software Engineering

**Unit 2: Software Engineering Models**

Software Process, Software Process Models (Linear Sequential Model, Prototyping Model, RAD Model, Evolutionary Software Process Models)

**Unit 3: Project Management**

Project Management Concept, Software Management Team, Common Software Management Problems, and Basic Management Techniques

**Unit 4: System Engineering**

System, Types of System, Elements of System, Approaches to Software Engineering (Structured approach, Object-Oriented approach)

**Unit 5: Analysis Concepts and Principles**

Requirements Analysis, Communication Techniques, Analysis Principles, Software Prototyping, Specification, Specification Review

**Unit 6: Analysis Modeling -I**

Elements of the Analysis Model, Data Modeling, Functional Modeling (DFD), Behavioral Modeling (STD)

**Unit 7: Analysis Modeling-II**

Entity Relationship Diagram (ERD), Control Flow Model, Control Specification and Process Specification, the Data Dictionary

**Unit 8: Design Concepts and Principles**

Design Concepts, Design Process, Effective Modular Design, Design Principles for Effective Modularity, Introduction to Design Model

**Unit 9: Software Testing Methods**

Software Testing Fundamentals, Testing objectives, Testing principles, Test Case Design, White box testing, Basis Path testing, Control Structure Testing, Black Box Testing.