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

Course: Software Engineering (3575/3420)

Level: PGD (CS)/MBA   **Semester: Autumn, 2012**

Total Marks: 100

ASSIGNMENT No. 1

Note: All questions are compulsory and carry equal marks.

Q.1   a)   What is meant by software? Discuss the different characteristics of software?

      b)   Define and explain Software engineering? How software engineering is different from conventional engineering?

Q.2   a)   Why do we use models for software process? What are the steps in software process?

      b)   Discuss the roles and responsibilities of different people involve in the software team?

Q.3   a)   Define and explain the working steps of Sequential model along with advantages and disadvantages?

      b)   As you move outward along the process flow path of the spiral model, what can you say about the software that is being developed or maintained?

Q.4   a)   What is a system? Explain the different types of system and list down the basic elements of a system?

      b)   Software project management is an important activity, explain? Also write down the responsibilities of Analyst?

Q.5   a)   Discuss the common software management problems?

      b)   Discuss the Basic Management techniques in Software Engineering?

ASSIGNMENT No. 2
Total Marks: 100

Note: All questions are compulsory and carry equal marks.

Q.1 a) Requirements analysis is an important activity in analysis of Software. Explain? Also discuss different communication techniques?

   b) Write down the basic analysis principles in detail?

Q.2 a) Define and explain data modeling, functional modeling and behavior modeling in detail?

   b) Explain the different notations used in DFD? Develop DFD for library management system?

Q.3 a) Discuss the importance of design process? Also write down the principles of designing?

   b) Define and explain cohesion and coupling with respect to module designing?

Q.4 a) Discuss the rules for mapping user requirements into software architecture?

   b) Define and differentiate between cardinality and modality with the help of example.

Q.5 a) Differentiate between validation and verification? Also discuss the principles of testing?

   b) Define and explain the difference between white-Box testing and Black Box testing with the help of examples?

3575 (Old 3420) Software Engineering
Recommended Book: Software Engineering 5th Edition by Roger Pressman

Course Outline:

Unit#1 Introduction
   a) Introduction to Software, Role of Software.
   b) Characteristics of Software, Need for Software
   c) Introduction to Software Engineering

Unit#2 Software Engineering Models
   a) Software Process.
   b) Software Process Models (Linear Sequential Model, Prototyping Model, RAD Mode, Evolutionary Software Process Models).

Unit#3 Project Management
   a) System, Types of System, Elements of Systems.

b) Project Management Concept.
c) Software Management Team.
d) Common Software Management Problems.
e) Basic Management Techniques.

Unit#4   Analysis Concepts and Principles
a) Requirements Analysis, Communication Techniques, Analysis Principles
b) Software Prototyping, Specification, specification Review

Unit#5   Analysis Modeling
a) Introduction to Analysis Modeling, Data Modeling
b) Functional modeling and Information Flow (DFD).
c) Behavioural Modeling STD
d) Entity Relationship Diagram (ERD)
e) Data Flow model and Control Flow Model (Structured)
f) Control Specification and Process Specification
g) The Data dictionary

Unit#6   Design Concepts and Principles
a) Design Concepts, Design Process.
b) Effective Modular Design.
c) Design principles for Effective modularity.
d) Introduction to Design Model

Unit#7   Design Methods
a) Data Design, Architectural Design.
b) Analyzing Alternative Architectural designs.
c) Mapping Requirements into a Software Architecture
d) Refining the Architectural Design

Unit#8   Software Testing Methods
a) Software Testing Fundamentals
b) Testing objectives, Testing principles.
c) Test Case Design.
d) White-Box Testing, Basis Path Testing, Control Structure Testing, Black-Box Testing

Unit#9   Case Study (Small Project)