CS3004D SOFTWARE ENGINEERING

Prerequisites: CS2002D Program Design, CS2006D Discrete Structures

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3	0	2	4

Total hours: 39T+26P

Module 1: (10T+5P Hours)

Introduction to Software Engineering – Reasons for software project failure – Similarities and differences between software and other engineering products. Software Development Life Cycle (SDLC) – Overview of Phases. Detailed Study of Requirements Phase.

Module 2: (10T+14P Hours)

Principles of software Design - Problem partitioning (subdivision) - Power of Abstraction. Concept of functional decomposition – UML diagrams - emphasis on class, object, sequence, activity diagrams. ER diagrams. Introduction to architectural patterns including MVC.
Coding and Testing: Structured programming – Methods and tools for version control - Maintainability. Types of testing – Specification of test cases – Code review and inspection process.

Module 3: (10T+7P Hours)

Software Project Management: Introduction to metrics. Software Process Models. Costing, Scheduling and Tracking techniques.
Methods of software licensing including free and open source software licenses.

Module 4: (9T Hours)

Current trends in Software Engineering: Extreme Programming - Values, Principles, Practices. Agile approach and manifesto. Introduction to Service Oriented Architecture - Entities and Characteristics - Web Service as an example of SOA Implementation- Evolution of Web Services- Technologies behind Web Service - SOAP, WSDL,UDDI, BPEL -RESTful Web Service Architecture- Micro Services.

References:

1. R. S. Pressman, *Software Engineering: A Practitioner's Approach,* 6/e, McGraw Hill, 2008.
2. T. C. Lethbridge and R. Laganiere, *Object Oriented Software Engineering,* 1/e, Tata McGraw Hill,2004.
3. K. Beck, *Extreme Programming,* 2/e, Pearson Education, 2006.
4. C. Fowler, *The Passionate Programmer,* SPD Pvt. Ltd., 2009.