DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

## LECTURE PLAN(2018-19)

Faculty Name: Abhishek Kumar Pandey

**Subject Name:** **Software engineering** **Subject Code: RCS-402**

**Total Lectures:** **43 Courses: B. Tech. CSE 4th Sem**.

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| Unit | Name of topic |  |
| **1**  **Introduction** | Introduction to Software Engineering, |  |
| Software Components , |  |
| Software Characteristics, Software Crisis |  |
| Software Engineering Processes  Interconnection Networks |  |
| Similarity and Differences from Conventional Engineering Processes, |  |
| Software Quality Attributes. Software Development Life Cycle (SDLC |  |
| Models: Water Fall Model, Prototype Model, Spiral Model, Evolutionary  Development Models, Iterative Enhancement Models. | 2 |
| Evolutionary Development Models, Iterative Enhancement Models  Development Models, Iterative Enhancement Models | 1 |
| 2 **Software Requirement Specifications** | Requirement Engineering Process: Elicitation, Analysis, Documentation |  |
| Review and Management of User Needs, Feasibility Study |  |
| Information Modeling, Data Flow Diagrams E R Diagrams, Decision Tables |  |
| SRS Document, IEEE Standards for SRS Software Quality Assurance |  |
| Verification &Validation, SQA Plans, Software Quality FM, ISO 9000 SEI-CMM |  |
| 3  Software Design | Basic Concept of Software Design, Architectural Design |  |
| Low Level Design: Modularization, Design Structure Charts Pseudo Codes, Flow Charts Coupling and Cohesion Measures |  |
| Design Strategies Function Oriented Design, Object Oriented Design, Top-Down and Bottom-Up Design. Control Flow Graphs |  |
| Software Measurement &Metrics: Various Size Oriented Measures Halestead’s Software Science, Function Point Based Measures, Cyclomatic Complexity Measures |  |
| **4**  Software Testing | Objectives, Unit, Integration, Acceptance, Regression Testing, Functionality and testing Performance, TopDown, BottomUp Testing Strategies Test Drivers& stubs |  |
| Structural Testing (White Box Testing),Functional Testing (Black Box Testing), | 1 |
| Test Data Suit Preparation, Alpha & Beta Testing of Products. Static Testing Strategies: Formal Technical Reviews (Peer Reviews) |  |
| Walk Through, Code Inspection, Compliance with Design and Coding Standards.  Presentation Layer- Design issues, |  |
| **5**  **Software Maintenance and Software Project Management** | Software as an Evolutionary Entity, Need for Maintenance, Categories of Maintenance: Preventive, Corrective and Perfective Maintenance |  |
| Cost of Maintenance, Software Re-Engineering, Reverse Engineering. |  |
| Software Configuration Management Activities, Change Control Process, Software  Version Control, An Overview of CASE Tools. |  |
| Estimation of Various Parameters - Cost, Efforts, Schedule/Duration, Constructive Cost Models (COCOMO), |  |
| Resource Allocation Models, Software Risk Analysis and Management. | 1 |

**Textbooks:**

1. R. S. Pressman, Software Engineering: A Practitioners Approach, McGraw Hill.

2. Rajib Mall, Fundamentals of Software Engineering, PHI Publication.

3. K. K. Aggarwal and Yogesh Singh, Software Engineering, New Age International Publishers.

4. Pankaj Jalote, Software Engineering, Wiley