Course Code: BCA-303 Total Contact Hours: 48 hrs. (60 Lectures)
Course Title: Software Engineering
Total Credits: 04 Total Marks: 100 Teaching Scheme: Theory-05 Lectures/ Week

Course Objectives:

- The Objective of this course is to understand system concepts, to know about software engineering and its application in Software development

Prerequisite: ERD

Unit No.	Content	No. of Lectures
1	**Introduction to System Concepts** 1.1 Definition 1.2 Basic Components 1.3 Elements of the system 1.4 System Components 1.5 Types of System	**2**
2	**Introduction to Software Engineering** 2.1 Definition of Software 2.2 Characteristics of Software 2.3 Software Application Domains 2.4 Definition of Software Engineering 2.5 Need for software Engineering 2.6 Mc Call's Quality factors 2.7 The Software Process 2.8 Software Engineering Practice	**6**
3	**Software Development Life Cycle(SDLC)and Methodologies** 3.1 Introduction 3.2 Activities of SDLC 3.3 A Generic Process Model 3.4 Prescriptive Process models 3.4.4.1 Waterfall Model 3.4.2 Incremental Process Models 3.4.3 Evolutionary process Models (Prototyping and Spiral Model) 3.5 Concurrent Models, Types	**12**
4	**Requirement Engineering** 4.1 Introduction 4.2 Requirement Engineering Tasks 4.3 Establishing Groundwork for understanding of Software Requirement 4.4 Requirement Gathering 4.5 Feasibility study 4.6 Fact Finding Techniques	**8**

5	**Analysis And Design Tools** 5.1 Decision Tree and Decision Table 5.2 Data Flow Diagrams (DFD) 5.3 Data Dictionary 5.3.1 Elements of DD 5.3.2 Advantages of DD 5.4 Input and Output Design 5.5 PseudoCode 5.6 Case Studies on above topics	**12**
6	**Software Testing** 6.1 Definition 6.2 Verification And Validation 6.3 Black box and White-Box Testing 6.4 Unit Testing 6.5 Integration Testing 6.6 System Testing 6.6.1Performance Testing 6.6.2 Stress Testing 6.7 Smoke Testing 6.8 User Acceptance Testing	**8**
7	**Maintenance and Reengineering** 7.1 Maintenance definition and types 7.2 Software reengineering 7.3 Reverse Engineering 7.4 Restructuring and forward Engineering.	**4**
8	**Agile Development** 8.1 Agility 8.2 Agile Process 8.2.1 Principles 8.2.2 The Politics Of Agile Development 8.2.3 Human Factors 8.3 Extreme Programming(XP) 8.4 Adaptive Software Development(ASD) 8.5 Scrum 8.6 Dynamic System Development Model (DSDM)	**8**

Reference Books:

1. Software Engineering : A Practitioner's Approach- Roger S. Pressman, McGraw hill International Editions 2010(Seventh Edition)
2. System Analysis, Design and Introduction to Software Engineering (SADSE) - S. Parthsarthy, B.W. Khalkar
3. Analysis and Design of Information Systems(Second Edition) - James A. Senn, McGraw Hill
4. System Analysis and Design- Elias Awad, Galgotia Publication, Second Edition
5. Fundamentals of Software Engineering- Rajib Mall, PHI Publication, Fourth Edition