1. Subject Name: **Software Engineering** Subject Code- **BCAAE401**
2. Year**: 2nd Year BCA** Semester: **4th**

**Pre-requisite:** Knowledge of basic programming and algorithm.

**Course Objectives:**

1. To apply software engineering lifecycle for planning, analysis, design, construction and deployment of a project.

2. To demonstrate an understanding of and apply current theories, models, and techniques that provides a basis for the software lifecycle.

3. To demonstrate an ability to use the techniques and tools necessary for engineering practice

4. To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.

**Course Outcomes (CO):** This course will serve to broaden the student's understanding of the issues and latest developments in the area of software development and maintenance. To reach this goal, the following objectives need to be met:

**CO1:** Decomposing the given project in various phases of a lifecycle.

**CO2:** Selecting appropriate process model depending on the user requirements.

**CO3:** Performing various life cycle activities like Analysis, Design, Implementation, Testing and

Maintenance.

**CO4:** Applying the knowledge, techniques, and skills in the development of a software product.

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| **Module Number** | **Topics** | **No. of Lectures** | **Course Outcome (CO)** |
| 1. | **Introduction & Software Lifecycle Models** | **6** |  |
| 1. Software Development Projects, Emergence of Software Engineering, Notable changes in Software, Development Practices, Computer System Engineering | 2 | CO1 |
| 1. Basic Concepts of software model, Waterfall Model and its extension, Spiral Model, A comparison of Different Life Cycle Models | 4 | CO1,CO2 |
| 2. | **Software Project Management**  **&**  **Requirement Analysis and Specification** | **7** |  |
| 1. Software Project Management Complexities, Responsibilities of a Software Project Manager | 2 | CO1,CO3 |
| 1. COCOMO-A Heuristic Estimation Technique | 3 | CO2,CO3 |
| 1. Scheduling, Software Requirement Specification(SRS) | 2 | CO2,CO3 |
| 3. | **Function Oriented Software Design** | **8** |  |
| 1. Overview of the Design Process, How to characterize a good software design? | 2 | CO3,CO4 |
| 1. Cohesion and Coupling, Approaches to Software Design, Structured Analysis | 3 | CO3,CO4 |
| 1. Developing the DFD Model of a System, Structured Design | 3 | CO3,CO4 |
| 4. | **Object Modelling using UML** | **8** |  |
| 1. Basic Object Oriented Concepts, Unified Modelling Language | 2 | CO3,CO4 |
| 1. UML Diagrams | 3 | CO3,CO4 |
| 1. Use Case Model, Class Diagrams | 3 | CO3,CO4 |
| 5. | **Coding and Testing** | **6** |  |
| 1. Coding, Software Documentation, | 3 | CO3,CO4 |
| 1. Testing, Black-Box Testing, White- Box Testing | 3 | CO3,CO4 |
| **Total Lecture Hours: 35 Hours** | | | |

Faculty In-Charge HOD,

Dr. Yogesh Kumar Jakhar Department of Computer Applications