

**SES's L.S. RAHEJA COLLEGE OF ARTS AND COMMERCE(AUTONOMOUS)**



**BOARD OF STUDIES:** Information Technology and Data Science

**PROGRAMME:** Bachelor of Science (Information Technology)

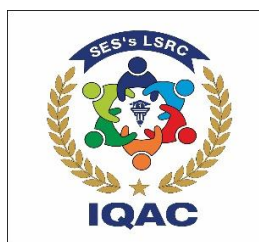
**SEMESTER:** IV

**NOMENCLATURE OF THE COURSE:** Software Engineering

**NEP Vertical:** Minor

**Credit:** 02

(As Per Choice Based Credit System (under NEP 2020) with effect from the academic year 2025-26)



|                                   |   |
|-----------------------------------|---|
| <b>Programme:</b>                 | <b>Bachelor of Science (Information Technology)</b> |
| <b>Nomenclature of the Course</b> | <b>Software Engineering</b>                         |
| <b>Total Marks</b>                | <b>50</b>   |
| <b>Semester:</b>                  | <b>IV</b>   |
| <b>Academic year</b>              | <b>2025-26</b>                                      |

**LEARNING OBJECTIVES:**

1. Develop the software projects or prototypes by understanding the requirements.
2. Meet the project deadlines along with the number of resources and type of tasks to be carried out.
3. Evaluate and analyze the SDLC and basic architecture SRS documents.

**COURSE OUTCOMES:**

1. Understand software engineering.
2. Apply software engineering principles

| <b>Unit</b> | <b>Course Content</b>   | <b>Andragogy</b>   | <b>No of Lectures</b> |
|-------------|---|--|-----------------------|
| <b>I</b>    | <p><b>Introduction:</b> What is software engineering? Software Development Life Cycle, Requirements Analysis, Software Design, Coding, Testing, Maintenance etc.</p> <p><b>Software Requirements:</b> Functional and Non-functional requirements, User Requirements, System Requirements, Interface Specification, Documentation of the software requirements.</p> <p><b>Software Processes:</b> Process and Project, Component Software Processes.</p> <p><b>Software Development Process Models.</b></p> <ul style="list-style-type: none"> <li>• Waterfall Model.</li> <li>• Prototyping.</li> <li>• Iterative Development.</li> <li>• Rational Unified Process.</li> <li>• The RAD Model</li> <li>• Time boxing Model.</li> </ul> <p><b>Agile software development:</b> Agile methods, Plan-driven and agile development, Extreme programming, Agile project management, Scaling agile methods.</p> | <ul style="list-style-type: none"> <li>• Give students problems: Provide problems for students to solve independently or in groups.</li> <li>• Focus on practical applications: Present knowledge and abilities in terms of their practical uses.</li> </ul> | <b>15</b>             |
| <b>II</b>   | <p><b>Socio-technical system:</b>Essential characteristics of socio technical systems, Emergent System Properties, Systems Engineering, Components of system such as organization, people and computers, Dealing Legacy Systems.</p> <p><b>Critical system:</b> Types of critical system, A</p>   | <ul style="list-style-type: none"> <li>• Give students problems: Provide problems for students to solve independently or in groups.</li> <li>• Focus on practical applications: Present</li> </ul>   | <b>15</b>             |

|  |  |  |  |
|--|--|--|--|
|  | <p>simple safety critical system, Dependability of a system, Availability and Reliability, Safety and Security of Software systems.</p> <p><b>Requirements Engineering Processes:</b> Feasibility study, Requirements elicitation and analysis, Requirements Validations, Requirements Management.</p> <p><b>System Models:</b> Models and its types, Context Models, Behavioural Models, Data Models, Object Models, Structured Methods</p> | <p>knowledge and abilities in terms of their practical uses.</p> |  |
|--|--|--|--|

### SUGGESTED READINGS

1. Somerville, I. (n.d.). *Software engineering*. Pearson Education.
2. Jalote, P. (n.d.). *Software engineering*. Narosa Publishing.
3. Pressman, R. (n.d.). *Software engineering: A practitioner's approach*. Tata McGraw-Hill.

## QUESTION PAPER PATTERN

### (A) FOR CONTINUOUS EVALUATION

| Particulars                 | Marks     |
|-----------------------------|-----------|
| Presentation/Viva Voce/Quiz | 10        |
| Assignment/Project          | 10        |
| <b>Total</b>                | <b>20</b> |

### (B) FOR SEMESTER END EXAMINATION

Maximum Marks: 30

Duration: 1 Hours

| Question No. | Description                          | Total Marks |           |
|--------------|--------------------------------------|-------------|-----------|
| Q. 1         | <b>Attempt the following Unit I</b>  | <b>15</b>   |           |
| A            | Remembering                          |             |           |
| B            | Analysing                            |             |           |
| C            | Applying                             |             |           |
|              | <b>OR</b>                            |             |           |
| P            | Remembering                          |             |           |
| Q            | Analysing                            |             |           |
| R            | Applying                             |             |           |
| Q. 2         | <b>Attempt the following Unit II</b> |             | <b>15</b> |
| A            | Understand                           |             |           |
| B            | Creating                             |             |           |
| C            | Evaluating                           |             |           |
|              | <b>OR</b>                            |             |           |
| P            | Understand                           |             |           |
| Q            | Creating                             |             |           |
| R            | Evaluating                           |             |           |