**Title of Subject : Software Construction & Development (SW-315)**

**Discipline :** Software Engineering (5th Semester)

**Effective :** 17 Batch & onwards

**Pre-requisite :** Software Design and Architecture

**Assessment :** Theory**:** 20% Sessional, 80% Written Semester Examination

## (20% Mid, 60% Final)

## Practical: 40% Sessional, 60% Final Examination

**Credit Hours :** 02 + 01 **Marks:** 50 + 50

 **Minimum Contact Hours:** 30 + 45

# Specific Objectives of course:

* To understand the basic processes of software Engineering.
* To learn science of development, deployment and configuration of a software.

**COURSE LEARNING OUTCOMES:**

Upon successful completion of the course, the student will be able to:

|  |  |  |  |
| --- | --- | --- | --- |
| **CLOs** | **Description** | **Taxonomy level** | **PLO** |
| 1 | Learning the software engineering process from basic to advanced level.  | C2 | 1 |
| 2 | Understanding the intricacies of software deployment and configuration. | C2 | 2 |
| 3 | Applying the knowledge to develop, deploy and configure software. | P2 | 3 |

**PROGRAM LEARNING OUTCOMES (PLOs):**

The course is designed so that students will achieve the following PLOs:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | Engineering Knowledge: | ☑ | 7 | Environment and Sustainability:  | ☐ |
| 2 | Problem Analysis: | ☑ | 8 | Ethics: | ☐ |
| 3 | Design/Development of Solutions: | ☑ | 9 | Individual and Team Work: | ☐ |
| 4 | Investigation: | ☐ | 10 | Communication: | ☐ |
| 5 | Modern Tool Usage: | ☐ | 11 | Project Management: | ☐ |
| 6 | The Engineer and Society: | ☐ | 12 | Lifelong Learning: | ☐ |

**Course outline:**

* **Software Engineering Process**

Software engineering process infrastructure, software systems lifecycle models, process implementation, life cycle model characteristics, Software process undertaken by individual or by team,

* **Application of theory by Software Pioneers**

Lehman’s laws (Code salvaging and configuration management), Martin Fowler’s refactoring concepts, Michael Feather’s legacy code concepts.

* **Software Configuration management**

Release management, software configuration management processes, software deployment processes, Distribution and backup, working with legacy systems, Refactoring, exception handling and Fault tolerance.

# Practical Work to be carried out:

|  |  |
| --- | --- |
| 1 | Software Development Methods |
| 2 | Class Diagram |
| 3 | Sequence Diagram  |
| 4 | Object Diagram |
| 5 | Activity Diagram |
| 6 | Requirements gathering strategies |
| 7 | Development of SRS document |
| 8 | OOP paradigm |
| 9 | Agile Frameworks |
| 10 | OOAD optimization |
| 11 | Unit Testing |
| 12 | Integration Testing |
| 13 | Software Deployment |
| 14 | Configuration Management |
| 15 | Case study/Project |

# Recommended Books:

1. Introduction to Software engineering by Ian Sommerville. (Latest Edition)
2. Software Configuration management by Professor Hossein Saydian
3. Working with effectively with Legacy code by Michael C. Feathers. (Latest Edition)

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| **Approval:** |  |
| **Board of Studies:** | **Resolution No. 02** | **Dated: 29-08-2019** |
| **Board of Faculty:** | **Resolution No. 01** | **Dated: 07-10-2019** |
| **Academic Council:** | **Resolution No. 96.10** | **Dated: 07-10-2019** |