SUBJECT: COMPUTER SCIENCE							
DSC	**BCS-C701**	**Software Engineering**	**L**	**T**	**P**	**C**	**Time for ESE**
			4	**-**	**-**	**4**	**3 Hrs.**

Pre- requisite: Discrete Mathematics, Algorithm.

Course Objectives:

- To understand the Software Engineering Practices and Process Models.

Course Outcomes:

CO1	Assessment in each module gives the overall Software engineering practice.
CO2	Ability to enhance the software project management skills.
CO3	Ability to design and develop a software product in accordance with Software Engineering principles.

Course Contents

UNIT	Contents	Lectures Required
1.	**Software Process**: Software Process, Characteristics, software development process models - Waterfall, Iterative, Prototype, Incremental, Spiral, win-win Spiral, Comparison. Project Management Process.	7
2.	**Software Requirement Analysis and specification**: Software Requirements, need for SRS, Problem analysis, Requirements specification, IEEE format of SRS, Requirements Engineering, Requirements Validation, Object-oriented Analysis Case Studies - Course Scheduling, Personal Investment Management System.	7
3.	**Software Architecture**: Role of Software Architecture, Architecture views, Component and Connector view. Architectural styles of C&C view. Evaluating Architectures.	7
4.	**Software Design**: Function Oriented Design: Principles, Module-level Concepts. Design notations and specifications, Structured design methodology, Verification, Metrics; Object-oriented design: OO Concepts, Design Concepts, Unified Modeling Language (UML); User Interface Design: Golden rules, User Interface Design, Interface Design Activities, Implementation tools	10
5.	**Testing Techniques & Strategies**: Fundamentals, Test case design, white box, black box, basis path, control structure testing, Strategic approach to software testing, Unit testing, Integration testing, Validation testing & System Testing.	7
6.	**Software Maintenance**: Definition, Maintenance activities, Software Reengineering, Reverse Engineering, Restructuring, Forward Engineering.	4
7.	**Effort & Schedule Estimation**: Software Project Estimation, Decomposition techniques, Empirical Estimation Models (COCOMO, Function Point Analysis, Delphi Approach), The Make/Buy decision. Automated Estimation tools.	6
	Total Lectures	48

Suggested Text Book(s):	
1.	Agarwal, KK, et. al., Software Engineering, New Age International Publication
2.	Jalote Pankaj, An Integrated Approach to Software Engineering, Narosa Publishing House, New Delhi
3.	Pressmann, RS, Software Engineering – A Practitioner's Approach, McGraw- Hill International Editions.
Suggested Reference Book(s):	
1.	Sommerville, Ian, Software Engineering, Pearson Education Asia.
2.	Bruegge and Allen H. Dutoit, Object-Oriented Software Engineering: Using UML, Patterns and Java, Pearson Education Asia.
Other Useful Resource(s)	
1.	https://onlinecourses.nptel.ac.in/noc20_cs68/preview
2.	https://www.youtube.com/watch?v=Z6f9ckEEIsU

Course Outcomes Contributed to Programme Outcomes

PO→ CO↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	AVERAGE
CO1	2	3	3	3	1	2	1	2	**2.1**
CO2	2	3	2	3	2	1	3	3	**2.4**
CO3	2	3	3	3	2	3	3	3	**2.8**
AVG.	**2.0**	**3.0**	**2.7**	**3.0**	**1.7**	**2.0**	**2.3**	**2.7**	**2.4**

Course Outcomes Contributed to Programme Specific Outcomes

PSO→ CO↓	PSO1	PSO2	PSO3	AVERAGE
CO1	3	3	2	**2.7**
CO2	3	3	2	**2.7**
CO3	3	3	3	**3.0**
AVG.	**3.0**	**3.0**	**2.3**	**2.8**